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NATIONAL INSTITUTE OF STANDARDS &
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Research Information Center
Gaithersburg, MD 20899

NISTIR 88-4005



Energy Related Inventions Program A Joint Program of the Department of Energy and the National Institute of Standards and Technology Status Report

F. L. Hart

October 1988

U.S. DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
(Formerly National Bureau of Standards)
Office of Energy Related Inventions
Gaithersburg, MD 20899



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National Bureau of Standards became the National Institute of Standards and Technology on August 23, 1988, when the Omnibus Trade and Competitiveness Act was signed. NIST retains all NBS functions. Its new programs will encourage improved use of technology by U.S. industry.

**U.S. DEPARTMENT OF COMMERCE
C. William Verity, Secretary
NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY
Ernest Ambler, Director**

TABLE OF CONTENTS

	PAGE
Section 1 Introduction	
1.0 Background	1-1
1.1 Overview of Program Operation	1-1
1.2 Evaluation Procedures (NBS)	1-3
1.3 Support Procedures (DOE)	1-3
1.4 Supplementary Activities	1-5
1.5 Nature of This Report	1-6
Section 2.0 ERIP Progress Reports	
2.0 Introduction	2-1
Section 3 Status of Recommended Inventions	
3.0 Introduction	3-1
3.1 Index to Recommended Inventions	3-1
3.2 Brief Descriptions and Status of Recommended Inventions	3-16
Section 4 Recommended Inventions Cross-reference Lists	
4.0 Introduction	4-1
Appendix A Invention Classifications	A-1
Appendix B Technical Categories	B-1

LIST OF TABLES

2-1 Progress Report by State	2-2
2-2 Progress Report by Technical Category	2-4
2-3 Progress Report by Invention Stage of Development	2-5
4-1 Recommended Inventions by Inventor Name	4-2
4-2 Recommended Inventions by Contact Name	4-16
4-3 Recommended Inventions by Invention Classification	4-31

Section 1 Introduction

1.0 BACKGROUND

The Office of Energy-Related Inventions (OERI) was established within the National Bureau of Standards now known as the National Institute of Standards and Technology (NIST) under the terms of Section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974. Section 14 directs NIST to "give particular attention to the evaluation of all promising energy-related inventions particularly those submitted by individual inventors and small companies for the purpose of obtaining direct grants" from the Department of Energy (DOE).

A separate office was established within DOE to coordinate financial and other DOE support to be provided for inventions recommended by NIST. The NIST and DOE offices together constitute the Energy-Related Inventions Program.

1.1 OVERVIEW OF PROGRAM OPERATION

The Energy-Related Inventions Program is jointly operated by NIST and the DOE. Funding is provided through the DOE budget (Conservation and Renewable Energy, Conservation, Energy Conversion and Utilization Technology).

Under the law NIST (OERI) is responsible for evaluation of inventions, whether submitted directly to OERI or submitted to DOE or other agencies and forwarded to OERI. OERI is also responsible for outreach activities aimed at bringing the Program to the attention of inventors and small businesses.

OERI reviews and processes all evaluation requests. Evaluation is based on three general criteria: technical feasibility, potential energy-conservation or supply impact, and commercial feasibility. All inventors are informed of the results of the evaluation of their invention. An invention which meets the NIST criteria for recommendation is forwarded to DOE for possible support action.

Inventions forwarded by the OERI to DOE are recommended as "technically valid and worthy of consideration for Government support" under the NIST/DOE Inventions Program. An OERI report is furnished with the recommendation to explain in detail the advantages of the technology as well as any qualifications of the recommendations, such as required testing. It also provides guidance to DOE and the inventor for deciding on the nature and extent of support to be given.

Inventions may be recommended by OERI at any stage of their development; some may be conceptual, others at the laboratory testing stage, while others may be in production or in the process of being marketed. How much support will be furnished will depend largely on what is required to move invention development forward or to resolve the question of whether development should continue; the latter question is of particular interest if the NIST evaluation is based on data furnished by the inventor and the recommendation is qualified by an expressed need for data validation under controlled testing conditions.

In general, DOE accepts the NIST recommendation and provides the appropriate support. However, there have been and will continue to be cases in which DOE cannot or will not provide support. DOE attempts to reach agreement with the inventor on the nature and extent of support within constraints. Constraints include the capabilities of the inventor and/or the company involved, possible duplication of prior or on-going DOE-funded efforts, availability of private sector support, and DOE fund limitations.

It should be noted that DOE performs no technical evaluation beyond that done by NIST. DOE does reserve the right to question and reject the NIST recommendation and to restrict support because of policy and/or funding considerations.

Each case is decided on the basis of its own merit and need. If DOE decides to support the invention, support can include: a grant, a contract, or direct assistance of a technical or business nature. DOE's objective is that, at the completion of this support, the inventor will be in a position to do one or more of the following:

- Compete effectively in obtaining contracts from other sources (including existing government programs) to permit further development of the invention.
- Assemble, with confidence of success, the people and capital necessary to produce and market products derived from the invention through a business enterprise in which the inventor is a major participant.
- Negotiate arrangements with an existing company that will develop the inventor's product for commercialization.

1.2 EVALUATION PROCEDURES (NIST)

There are three principal steps in the evaluation process used by the NIST Office of Energy-Related Inventions. In the first step, Disclosure Review and Analysis, invention disclosures are either accepted or rejected for evaluation, depending upon whether or not the invention is within program scope and the disclosure is sufficiently well-prepared to enable evaluation. If accepted, a formal evaluation is initiated.

First-Stage Evaluation is a technical screening in which brief opinions are obtained from OERI staff evaluators, other government scientists or engineers, or consultants or contractors. If the invention is rated as "promising" in this First-Stage, Second-Stage Evaluation is initiated. ("Promising" means the invention seems to be technically feasible, have significant energy conservation or supply potential, and to be economically and commercially practical.)

In Second-Stage Evaluation an analysis is conducted in greater depth, resulting in a formal report. If Second-Stage Evaluation confirms the finding of "promising," the disclosure and evaluation results are forwarded to DOE with a recommendation for Government support.

Throughout the process, the inventor is kept informed of the status of the evaluation. The inventor is sent a letter notifying him of the results of First- or Second-Stage evaluations as they are completed. If Second-Stage Evaluation has been conducted, a copy of the Second-Stage invention review is also sent to the inventor. Statistics on NIST evaluations since the inception of the program are presented in Section 2.

1.3 SUPPORT PROCEDURES (DOE)

Upon receipt of a recommendation from NIST, DOE contacts the inventor, provides details of the support procedures, and requests a statement as to the nature and extent of support desired, generally in the form of a proposal or grant application. The DOE invention coordinator works with the inventor in proposal preparation to ensure effective review of support options and to develop a satisfactory statement of work and support plan. DOE then decides whether or not to provide support as well as the nature and extent of support.

If financial support is to be provided, DOE initiates procurement action, monitors progress of the procurement action, and helps to expedite processing of the paperwork until the award is made. As of September 1988 DOE has awarded a total of \$21,418,921 to 290 of the inventions recommended by NIST.

During the period that financial or other support is provided, the DOE invention coordinator monitors and assists the inventor's efforts, maintaining a status report for use by both DOE and NIST.

Section 3 of this report provides a brief description of each recommendation by OERI and briefly describes its status as of September 30, 1988. Status is described in terms of the following steps in the DOE support process.

Analysis Recommendation received from NIST and processed, file initiated, etc. Inventor asked to submit description of proposed work. Receipt of inventor's preliminary proposal initiates next stage. Formulate options for support, based upon input from NIST, DOE program staff, and inventor. Determination of the feasible options initiates next stage.

Decision Phase Statement of Work derived from above options. Inventor requested to submit supporting documents for procurement action. Prepare purchase request.

Other Assistance National Laboratory testing, or business planning assistance, sometimes leading to a grant award.

Procurement Step-by-step processing of all documents leading to an award of grant or contract.

Award Inventor awarded grant or contract. Work commences. Final report due at end of work period.

No Basis For DOE Support Inventor notified that sources of support within DOE have been investigated, but recommendation will not be supported, e.g., inventor not interested, no area of appropriate DOE support could be identified, conflict with other DOE contractors being supported.

Complete Inventor has complied with all the requirements of his Statement of Work, and/or DOE assistance in this program is terminated.

1.4 SUPPLEMENTARY ACTIVITIES

1.4.1 National Innovation Workshops (NIW)

This project was initiated in early 1980 as a means of informing inventors about the Program and increasing the percentage of higher-quality inventions submitted to OERI. Another objective of the Workshop series is to assist inventors (thus to stimulate innovation in general) by putting them in touch with their community resources and by providing practical instruction in the various elements of the innovation process.

Workshops are conducted in a standard format as 2-day seminars. On each day a plenary session and a luncheon session feature national-level speakers on invention and innovation. Three 1 1/2 hour periods each day then are designated for the conduct of 8 to 10 concurrent Workshop sessions.

The Workshops are organized as regional activities by a committee composed of representatives from such regional organizations as universities, venture or other financing groups, private sector institutions concerned with technological innovation, state and local government agencies, patent law associations, etc. Federal involvement is restricted to provide guidance and financial support. The federal role is catalytic in nature in that Workshop feasibility is demonstrated with the expectation that the regional committee will continue Workshops and similar activities in the future without federal involvement.

Forty-seven NIWs have been held to date, including six in calendar year 1988. NIWs scheduled in 1989 include: Las Vegas, NE - January; Louisville, KY - February; Columbia, SC - April; Norman, OK - April; Ames, IA - September; Fairfax, VA - October. Attendance has averaged about 250 inventors and small businesses.

1.4.2 Commercialization Planning Workshops (CPW)

This series of workshops, managed entirely by DOE, was initiated in June 1984 as a mechanism for providing direct and immediate assistance to inventors whose inventions have been recommended by NIST. Each workshop brings together a group of 10-14 such inventors for a three day meeting with a "faculty" of six workshop leaders who are selected by DOE on the basis of their expertise in at least one aspect of innovation (business planning, marketing, finance, licensing, etc.). Workshop attendance is limited to inventors invited by DOE and the faculty.

The three-day meeting is devised to provide a concentrated educational/informative experience for each recommended inventor; travel and other meeting expenses are paid for by the Government. The objective in each case is for the recommended inventor to develop, with the aid of the faculty, a detailed plan for commercialization of his invention. The plan then serves as the principal basis for the DOE office to conduct their initial review of the recommendation (Analysis).

Four such workshops were held during calendar 1988.

1.5 NATURE OF THIS REPORT

This report comprises an introductory section (Section 1), followed by two report sections (Sections 2 and 3), a cross reference listings section (Section 4), and two appendices.

Section 2 presents progress reports of ERIP activities. These reports summarize the results of invention evaluations by state, technical category, and invention stage of development.

Section 3 is the main body of the report. It contains brief descriptions of each of the inventions recommended, a summary of its status, the identity of the DOE staff coordinator for that invention, the date the invention was submitted to NIST and the date recommended to DOE. The name and address of the person to contact regarding the invention are also included whenever they are available, as are the patent numbers and DOE grant numbers. The inventions are presented in chronological order of their recommendation by NIST.

Section 4 of the report contains three cross reference listings for use in finding specific recommended inventions. The first listing is ordered by inventor name, the second listing is ordered by contact name, and the third by invention classification.

The appendices at the end of the report include: a listing of the detailed invention classifications (Appendix A) and a listing of the technical categories (Appendix B). Each invention received for evaluation is assigned an invention classification. The invention classifications are grouped to form the technical categories.

SECTION 2 ERIP PROGRESS REPORTS

2.0 Introduction

This section presents reports of the results of the ERIP evaluations. As described in section 1, each evaluation is conducted in several stages. The following reports summarize the results of the evaluations across each of the stages. Table 2-1 presents the distribution of invention evaluation requests across stages by State. Table 2-2 presents the distribution of invention evaluation requests across stages by Technical Category. Each evaluation request received is classified into one of 184 technical areas for evaluation purposes. These areas are combined to form nine technical categories for reporting purposes. Appendix A list the technical area codes and titles; Appendix B lists technical categories and associated technical area codes. Table 2-3 presents the distribution of invention evaluation requests across stages by stage of development at the time of submission.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

TABLE 2-1

EVALUATION PROGRESS REPORT BY STATE

STATE	EVALUATION REQUESTS RECEIVED	COMPLETED DISCLOSURE REVIEW	ACCEPTED FOR		COMPLETED FOR		RECOMMENDED
			FIRST STAGE	SECOND STAGE	FIRST STAGE	SECOND STAGE	
ALABAMA	257	257	117	117	6	6	2
ALASKA	58	58	27	26	2	1	1
ARIZONA	390	390	246	241	29	28	5
ARKANSAS	145	145	68	67	10	10	4
CALIFORNIA	3264	3264	1686	1647	169	163	49
COLORADO	492	492	328	324	40	40	6
CONNECTICUT	478	478	269	267	25	24	13
DELAWARE	60	60	41	41	7	7	4
DISTRICT OF COLUMBIA	106	106	55	54	9	9	0
FLORIDA	1503	1503	726	719	45	42	15
GEORGIA	313	313	148	147	20	19	7
HAWAII	101	101	57	55	4	4	3
IDAHO	109	109	67	67	9	9	3
ILLINOIS	902	902	515	507	68	64	24
INDIANA	399	399	187	184	15	15	5
IOWA	209	209	107	98	4	3	2
KANSAS	258	258	116	113	6	6	2
KENTUCKY	218	218	96	88	7	6	4
LOUISIANA	266	266	130	127	15	15	9
MAINE	146	146	73	73	8	8	3
MARYLAND	666	666	409	406	48	46	17
MASSACHUSETTS	931	931	488	483	61	60	23
MICHIGAN	854	854	443	439	29	28	11
MINNESOTA	424	424	241	239	21	18	9
MISSISSIPPI	167	167	41	40	3	3	0
MISSOURI	521	521	298	280	28	23	6
MONTANA	93	93	43	42	6	5	2

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

TABLE 2-1
EVALUATION PROGRESS REPORT BY STATE

STATE	EVALUATION REQUESTS RECEIVED	COMPLETED DISCLOSURE REVIEW	ACCEPTED FOR		COMPLETED FOR		RECOMMENDED
			FIRST STAGE	SECOND STAGE	FIRST STAGE	SECOND STAGE	
NEBRASKA	130	130	65	63	7	7	4
NEVADA	122	122	58	58	3	3	0
NEW HAMPSHIRE	132	132	75	75	15	15	5
NEW JERSEY	874	874	473	472	56	55	18
NEW MEXICO	190	190	98	97	13	12	5
NEW YORK	1894	1894	1057	1045	85	79	29
NORTH CAROLINA	387	387	197	194	11	10	4
NORTH DAKOTA	52	52	20	19	1	1	1
OHIO	811	811	399	393	45	43	18
OKLAHOMA	341	341	182	175	29	28	13
OREGON	478	478	230	228	16	16	5
PENNSYLVANIA	1050	1050	564	557	71	68	31
RHODE ISLAND	77	77	32	32	4	4	1
SOUTH CAROLINA	163	163	80	76	10	8	3
SOUTH DAKOTA	47	47	24	24	3	2	1
TENNESSEE	377	377	171	170	12	12	4
TEXAS	1217	1217	618	601	62	58	24
UTAH	207	207	107	104	17	15	10
VERMONT	77	77	51	51	8	8	2
VIRGINIA	499	499	264	258	31	31	10
WASHINGTON	734	734	298	292	27	25	12
WEST VIRGINIA	97	97	43	43	2	2	1
WISCONSIN	424	424	197	195	15	14	6
WYOMING	57	57	29	24	0	0	0
TERRITORIES	55	55	24	24	2	2	1
FOREIGN COUNTRIES	1181	1181	518	513	42	41	7
	25003	25003	12896	12674	1281	1221	444

TABLE 2-2

EVALUATION PROGRESS REPORT BY INVENTION CATEGORY

CLASSIFICATION	EVALUATION REQUESTS RECEIVED		FIRST STAGE COMPLETED		SECOND STAGE ACCEPTED		COMPLETED RECOMMENDED		% TOTAL RECEIVED		% OF TOTAL EXPECTED TO BE RECOMMENDED**	
			ACCEPTED	COMPLETED	ACCEPTED	COMPLETED	COMPLETED	RECOMMENDED	RECEIVED	RECOMMENDED**		
FOSSIL FUEL PRODUCTION	534	414	414	400	113	110	46	2.1	9.2			
DIRECT SOLAR	2592	1436	1436	1433	94	93	22	10.4	0.9			
OTHER NATURAL SOURCES	3297	1406	1406	1396	96	96	22	13.2	0.7			
COMBUSTION ENGINES & COMPONENTS	2596	1686	1686	1665	107	105	21	10.4	0.8			
TRANSPORTATION SYSTEMS, VEHICLES & COMPONENTS	2038	1246	1246	1225	99	89	32	8.2	1.8			
BUILDINGS, STRUCTURES & COMPONENTS	4117	3107	3107	3062	241	231	84	16.5	2.2			
INDUSTRIAL PROCESSES	1670	1332	1332	1283	336	318	146	6.7	9.6			
MISCELLANEOUS	3378	2024	2024	1973	186	174	68	13.5	2.2			
OUT OF SCOPE & UNCLASSIFIABLE	4772	245	245	237	9	5	3	19.1	0.1			
TOTALS	24994*	12896	12896	12674	1281	1221	444	100.0	1.9			

*EXCLUDES 9 NOT YET CLASSIFIED. (DISCLOSURE REVIEW NOT COMPLETED).

**FOR EXAMPLE: FOSSIL FUEL PRODUCTION --- X --- X --- X 100 = 9.2%
 414 113 46
 534 400 10

COUNT FOR CUT OFF AT ER RECEIVED DATE
 CUT OFF DATE SEP 30, 1988, NUMBER OF SETS PRESENT 25003

TABLE 2-3
 PROGRESS REPORT BY INVENTION STAGE OF DEVELOPMENT

STAGES OF DEVELOPMENT	NUMBER ACCEPTED		NUM. REACHING		NUM. RECOM.		NUMBER ACCEPTED		% REACHING		NUM. RECOM.
	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND	
CONCEPT DEFINITION	3582	1310	68	21	22.6%	15.1%	7.8%	6.7%	23.5	16.4%	14.4%
CONCEPT DEVELOPMENT	4125	2036	142	45	3.4%	3.9%	6.8%	7.3%	9.5%	12.6%	15.0%
LABORATORY TEST	552	344	59	23	12.9%	15.1%	12.4%	11.5%	7.3%	9.1%	8.6%
ENGINEERING DESIGN	1426	825	109	47	6.5%	8.9%	14.3%	13.4%	2.5%	3.6%	3.5%
WORKING MODEL	2050	1314	107	36	4.6%	4.6%	12.1%	14.1%	4.0%	4.4%	5.1%
PROTOTYPE DEVELOPMENT	1040	635	79	27	1005	124	42	8.9%	11.6%	14.3%	13.4%
PROTOTYPE TEST	1425	1005	124	42	224	31	11	1.9%	2.5%	3.6%	3.5%
PRODUCTION ENGINEERING	309	224	31	11	609	105	44	4.6%	7.0%	12.1%	14.1%
LTD PROD. & MKTG.	739	609	105	44	349	38	16	3.8%	4.0%	4.4%	5.1%
PRODUCTION & MARKETING	604	349	38	16	9151	4245	132				
Unclassified *	25,003	12,896	1,281	444							
TOTALS											

Note: Percentages shown reflect only those inventions assigned a stage of development.

* Stage of Development assignment did not begin until 1978.
 Stage of Development assignments shown in Section 3 for inventions not classified were assigned at the time of recommendation.

SECTION 3

STATUS OF RECOMMENDED INVENTIONS

3.0 Introduction

This section contains an index and brief descriptions of each of the inventions recommended by the Office of Energy Related Inventions at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The address of the contact is provided if an award has been made. At the time of receipt, DOE assigns a number (DOE No.) to each recommended invention. These numbers are used for tracking purposes and are also the key for sequencing the descriptions presented in this section. Section 4 presents three cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, Contact name, and invention classification.

3.1 Index to Recommended Inventions

The following is an index to the recommended inventions showing invention DOE No., invention status and title.

INDEX TO RECOMMENDED INVENTIONS

<u>DOE No.</u>	<u>STATUS</u>	<u>TITLE</u>
0001	No DOE Support	Demand Metering System for Electric Energy
0002	Other Assistance	Fuel Miser
0003	Complete	Hydrogen Generation from Producer Gas by Oxidation-Reduction of Tin
0004	Complete	Power Conversion of Energy Fluctuations
0005	Complete	Diesel Engine Conversion System for Gasoline Engines
0006	Complete	Micro-Carburetor
0007	Complete	Hydraulically Powered Waste Disposal Device
0008	Complete	Inertial Storage Transmission
0009	Complete	Heat/Electric Power Conversion via Charged Aerosols
0010	Complete	Scrap Metal Preheating Method and Apparatus
0011	Complete	Solar Collector
0012	Complete	High Frequency Energy Saving Device
0013	Complete	Anti-Pollution System
0014	Complete	Aerodynamic Lift Translator
0015	Complete	Estacron

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0016	Complete	Method and Apparatus for Vacuum Drying of Commodities
0017	Complete	Osmotic-Hydro Power Generation
0018	Complete	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
0019	Complete	Phenol Methylene Foam Rigid Board Insulation
0020	Complete	Thermal Shade
0021	Complete	Waste Oil Utilization System
0022	No DOE Support	Fuel Burner Attachment
0023	No DOE Support	Microgas Dispersions
0024	Complete	Can and Bottle Crushing Apparatus
0025	Complete	Sulfur Removal from Producer Gas-High Temperature
0026	Complete	Compact Energy Reservoir
0027	Complete	Waste Heat Utilization for Commercial Cooking Equipment
0028	Other Assistance	Ultraflo
0029	Complete	Tuned Sphere Stable Ocean Platforms
0030	Complete	Method of Removing Sulfur Dioxide from Flue Gases
0031	Complete	Ceramic Rotors and Vanes
0032	Complete	Wood Gas Reactor
0033	Complete	Temperature Indicating Device
0034	Complete	Delphic Thermogenic Paint (Heat Film)
0035	No DOE Support	Utilization of Solar Energy by Solar Pond System
0036	Complete	Computerstat
0037	No DOE Support	Hotwater Engine
0038	Complete	Reduction Volatilizations
0039	No DOE Support	Lawler Steam Generator and Lawler System of Thermal Oil Recovery
0040	No DOE Support	Improved Equipment and Process for Production of Blue Water Gas
0041	No DOE Support	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
0042	Complete	Flue Baffle Assembly
0043	Complete	Thermal Gradient Utilization Cycle
0044	Complete	New Working Fluids for Increasing the Cycle Efficiencies of Thermal
0045	Complete	Bulk Cure Tobacco Barn with Improvements
0046	Complete	Thexon Dehydration
0047	Complete	Wastewater Aeration Power Control Device
0048	No DOE Support	Howald Combustor
0049	No DOE Support	Automatic Control System for Water Heaters
0050	Complete	Scotsman Fuel Energizer
0051	No DOE Support	Thermal Efficiency Construction
0052	No DOE Support	Air Wedge
0053	Complete	High Efficiency Water Heater
0054	Complete	Optimizer
0055	No DOE Support	Electrically Heated Sucker-Rod

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0056	Complete	Flexaflo-The Wet Fuel Dryer
0057	Complete	X-5 Smoke Eliminator
0058	Complete	A Multiple Spark System Using Inductive Storage
0059	No DOE Support	The Volumetric Gas Turbine
0060	Complete	Electric Transport Refrigerator
0061	Complete	Fuel Preparation Process
0062	Complete	Tapered Plate Annular Matrix
0063	Complete	Fluorobulb
0064	Complete	The Mahalla Process--A Hydrometallurgical Method for Extracting Copper
0065	Complete	WattVendor
0066	Complete	Heat Extractor
0067	Complete	Windmill Using Hydraulic System for Energy Transfer and Speed Control
0068	Other Assistance	Under Compression and Over Compression Free Helical Screw Rotary Compressor
0069	Complete	Ionic Fuel Control System for the Internal Combustion Engine
0070	Complete	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
0071	No DOE Support	Knight Guard
0072	No DOE Support	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
0073	Complete	INTECH
0074	Complete	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
0075	Complete	Coke Quenching Steam Generator
0076	Complete	The Ross Furnace
0077	Complete	Variable Heat Refrigeration System
0078	No DOE Support	System for High Efficiency Power Generation from Low Temperature Sources
0079	Complete	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
0080	No DOE Support	Improved Unfired Refractory Brick
0081	Complete	Flash Polymerization
0082	Complete	Cool Air Induction
0083	Complete	Vertical Solar Louvers
0084	No DOE Support	Kinetic Energy Type Pumping System
0085	Complete	Dielectric Windowshade
0086	Complete	Coke Desulfurization
0087	Complete	Recovering Uranium From Coal in Situ
0088	Complete	System-100
0089	Complete	Continuous Casting Process and Apparatus
0090	No DOE Support	Grain Dryer
0091	Complete	Mine Brattice

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0092	No DOE Support	Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
0093	Complete	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions
0094	Complete	Lantz Converter
0095	No DOE Support	Omni-Horizontal Axis-Wind Turbine
0096	Complete	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
0097	Complete	Water Drying System
0098	Award	Process Development to Conserve Energy and Material---(in the manufacture of)---Bearings
0099	Complete	Light Weight Composite Trailer Tubes
0100	Complete	Solaroll
0101	Complete	Controlled Combustion Engine
0102	Complete	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners
0103	Complete	Low Voltage Ionic Fluorescent Light Bulb
0104	Complete	Low Continuous Energy Mass Separation System
0105	Complete	High Frequency Furnace
0106	No DOE Support	Deep Shaft Hydro-Electric Power
0107	Complete	Waste Products Reclamation Process
0108	Complete	Processing Recovery of Aluminum
0109	Complete	Hydrostatic Meat Tenderizer
0110	Complete	Improved Windpower Generating System
0111	Complete	Haspert Mining System
0112	Complete	Pump
0113	Complete	Wallace Mold Additive System
0114	No DOE Support	New Energy-Saving Tire for Motor Vehicles
0115	Complete	Refrigeration System
0116	No DOE Support	Model 5000 ASEPAK System
0117	Complete	"Solarspan" Prism Trap
0118	Complete	Energy Adaptive Control of Precision Grinding
0119	No DOE Support	Air Ratio Controller (AERTROL)
0120	Complete	Vapor Heat Transfer Commercial Griddle
0121	No DOE Support	Solar Space Heating for both Retrofit and New Construction
0122	Complete	Lean Limit Controller
0123	Complete	Comminution of Ores by a Low-Energy Process
0124	No DOE Support	Solar Collector
0125	Complete	The Turbulator Burner System
0126	Complete	Vaclaim
0127	Complete	Process and Apparatus to Produce Crude Oil from Tar Sands
0128	Complete	Continuous Distillation Apparatus and Method
0129	Complete	Super U System - Snap Strap
0130	No DOE Support	Furnace Input Capacity Trimming Switch
0131	Complete	Valve Deactuator for Internal Combustion Engines

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0132	No DOE Support	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
0133	Complete	AUTOTHERM Car Comfort System
0134	Complete	Expanded Polystyrene Bead Insulation System
0135	Complete	Point Focus Parabolic Solar Collector
0136	Complete	Windamper
0137	Complete	A Portable Pollution Free Automobile Incinerator
0138	No DOE Support	Phantom Tube
0139	No DOE Support	Transformer With Heat Dissipator
0140	Complete	Counter Flow Dual Tube Heat Exchanger
0141	Complete	New Hydrostatic Transmission
0142	Complete	Process for Heatless Production of Hollow Items
0143	Award	Oil Well Pump Jack
0144	No DOE Support	SpaCirc Space Circulation Fan
0145	Complete	Solar Conversion by Concentration Cells with Hydrides
0146	Complete	Line Integral Method of Magneto-Electric Exploration
0147	No DOE Support	Railroad Switch Heater
0148	Complete	Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes
0149	Complete	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
0150	Complete	The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
0151	No DOE Support	Film Type Storm Window
0152	Complete	Vehicle Exhaust Gas Warm-up System
0153	No DOE Support	A New Equipment Design Concept for Storage of Hot Foods
0154	No DOE Support	Rotating Horsehead for Pumping Units
0155	Award	Slip Mining
0156	Complete	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
0157	Complete	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools.
0158	Award	Energy Conservative Electric Cable System
0159	Complete	Non-Tubing Type Lift Device, Described as the NTT Rabbit
0160	Complete	High Efficiency Absorption Refrigeration Cycle
0161	Complete	duPont Connell Energy Coal Gasification Process
0162	Complete	Tubular Pneumatic Conveyor Pipeline
0163	Complete	Thermotropic Plastic Films
0164	Complete	Elastomer Energy Recovery Elements and Vehicle Component Applications
0165	Complete	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen
0166	Complete	Borehole Angle Control
0167	Complete	Vaned Pipe for Pipeline Transport of Solids

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0168	Complete	The Hot Water Saver
0169	No DOE Support	MIRAFOUNT
0170	No DOE Support	Fog System - Low Energy Freeze Protection for Agriculture
0171	Complete	A Method of Preserving Fruits and Vegetables without Refrigeration
0172	Complete	GEM Electrostatic Filtration System
0173	Complete	Thermal Ice Cap
0174	No DOE Support	Skate on Plastic Ice Skating System
0175	Complete	A Low-Energy Carpet Backing System
0176	No DOE Support	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
0177	Complete	The Solar I Option
0178	Complete	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
0179	Complete	Development and Commercialization of Low Cost, Non-Metallic, Solar Systems
0180	Complete	Adjustable Solar Concentrator (ASC)
0181	Complete	The Karlson Ozone Sterilizer
0182	Complete	Improved Seal for Geothermal Drill Bit
0183	Complete	Increased Vapor Generator Feature. Reheat Vapor Generator
0184	No DOE Support	Coasting Fuel Shutoff
0185	No DOE Support	Insulated Garage Door
0186	No DOE Support	Oil Recovery by In-Situ Exfoliation Drive
0187	No DOE Support	Variable Field Induction Motor
0188	Complete	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
0189	Complete	Pump Jack
0190	Complete	Oxygen-Conducting Material and Oxygen-Sensing Method
0191	Award	Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
0192	Complete	Closed Cycle Dehumidification Clothes Dryer
0193	Award	Engine Heating Device
0194	Complete	Radiant Energy Power Source for Jet Aircraft
0195	Complete	Proportional Current Battery
0196	Complete	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
0197	Complete	Frequency Regulator and Protective Devices for Synchronous Generators
0198	No DOE Support	The Thermatreat System
0199	Award	Rotary Coal Combustor and Heat Exchangers
0200	Award	Removal of Sulfur Dioxide from the Stack Gas of Combustors Burning High Sulfur Fuel
0201	Complete	Hydraulic, Variable, Engine Valve Actuation System
0202	Complete	Wobbling Type Distillation Apparatus

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0203	Complete	Microwave Methods and Apparatus for Paving and Paving Maintenance
0204	No DOE Support	The Induction Propeller
0205	No DOE Support	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
0206	Complete	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
0207	Analysis	Glass Sheet Manufacturing Method and Apparatus
0208	Complete	CNG Automotive Fuel Cylinders/Gas Transport Modules
0209	Complete	Reclaiming Process for Resin Treated Fiberglass
0210	Award	Ultra High Speed Drilling Device for Use in Hard Rock Formations
0211	Complete	Shock Mounted Stratapax Bit
0212	Other Assistance	Water Warden
0213	Complete	The Kaunitz Process for Welding Pipe
0214	Complete	Convertible Flat/Drop Trailer
0215	Award	Slag Waste Heat Boiler
0216	Complete	Method and Assembly for Mounting a Semiconductor Element
0217	Award	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
0218	Other Assistance	Behemoth
0219	Complete	Method for Making Acetaldehyde from Ethanol
0220	Complete	Deep Throat Resistance Welder
0221	Other Assistance	Strainercycle
0222	Other Assistance	Louver Trombe Solar Storage Unit
0223	Complete	Minimizing Subsidence Effects during Production of Coal In Situ
0224	Complete	Haile Alternate Fuel Grain Dryer
0225	Award	ROVAC High Efficiency Low Pressure Air Conditioning System
0226	No DOE Support	An Electronic Anemometer System for Locating Air-Infiltration Heat Leaks in Buildings
0227	Complete	CRM Pipe
0228	Award	EGD Fog Dispersal System
0229	No DOE Support	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
0230	Complete	Absorption Heat Pump Augmented Separation Process
0231	Complete	Natural Gas from Deep-Brine Solutions
0232	Award	Method of Separating Lignin and Making Epoxide-Lignin
0233	No DOE Support	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
0234	Complete	Geodesic Solar Paraboloid
0235	Complete	Single Stage Anaerobic Digestion Process
0236	Complete	Steam Turbine Packing Ring
0237	Complete	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0238	Complete	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
0239	Complete	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
0240	No DOE Support	All Steam Heated Sadiron for Commercial Use
0241	Award	Polysulfide Oil Field Corrosion Control System
0242	Complete	New Petersburg Beam Trawl
0243	Complete	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
0244	Award	CHARLIE - Trademark - Federally Registered 1123957
0245	Complete	Improved Oil Well Pumping Unit
0246	No DOE Support	Maximum Cruise Performance
0247	Complete	Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems
0248	Award	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
0249	Award	Subsurface Flow Control (Gas Wells) and High Gas-Oil-Ratio Oil Wells
0250	Award	A System to Adapt Diesel Engines to the Use of Crude Oils
0251	Award	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
0252	Complete	Thermal Bank
0253	Complete	High Performance Heat Pump
0254	Complete	"Turbo-Glo" Immersion Furnace
0255	Decision Phase	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
0256	Other Assistance	Method and Apparatus for Irrigating Container Grown Plants
0257	Complete	Method and Apparatus for Melting Snow
0258	Award	Corrosion Protection Process for Bore Hole Tool
0259	Complete	Hydrostatic Support Sleeve and Rod - Gas Release Probe
0260	Complete	Method and Apparatus for Handling and Dry Quenching Coke
0261	Other Assistance	A New Apparatus for Making Asphalt Concrete
0262	Award	Energy Saving Pump and Pumping System
0263	Other Assistance	Method for Reconditioning Rivetless Chain Links
0264	Award	Desulfurization of Coal
0265	Award	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
0266	Other Assistance	Energy Conversion Method
0267	Award	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge
0268	Award	Apparatus for Enhancing Chemical Reactions
0269	Analysis	Refrigerant Accumulator and Charging Apparatus
0270	Award	Method of Energy Recovery for Wastewater Treatment

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0271	Complete	Hydrogen Storage System
0272	Award	V-Plus System
0273	No DOE Support	Open Cycle Latent Heat Engine
0274	Complete	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
0275	Complete	Low Head - High Volume Pump
0276	Award	Gas Concentration cells as Converters of Heat into Electrical Energy
0277	Analysis	Electronic Conveyor Control Apparatus
0278	Complete	Complete System for Large Solar Water Heating and Storage
0279	Complete	Method and Means for Preventing Frost Damage to Crops
0280	Award	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
0281	Award	Sun Synchronous Solar Powered Refrigerator
0282	Award	Insulated Siding
0283	Complete	Aluminum Roofing Chips
0284	Award	Atomized Oil-Injected Rotary Screw Compressors
0285	Award	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
0286	Complete	Use of Pulse-Jet for Atomization of Coal/Water Mixture
0287	Award	Automatic Variable Pitch Marine Propeller
0288	Decision Phase	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
0289	Complete	An Earthquake Barrier
0290	Complete	Low Energy Ice Making Apparatus
0291	Award	Selective Zone Isolation for HVAC System
0292	Complete	Roof Construction Having Membrane and Photo Cells
0293	Complete	"Therm-A-Valve" - Insulated Valve Coverings
0294	Complete	Highway Power Patcher
0295	Complete	Improved Method of Electroplating Aluminum for Corrosion Resistance
0296	Complete	Shower Bath Economizer
0297	Award	Series (Two-Wire) V-Controller
0298	Award	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
0299	Award	Process for Using Cocurrent Contacting Distillation Column
0300	Complete	Casing Stabbing Apparatus
0301	Complete	Pump Control System for Windmills
0302	Award	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
0303	Award	Battery Heating Device
0304	Award	Exfoliated Graphite Fibers
0305	Award	Automatic Filter Network Protection, Failure Detection and Correction System and Method

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0306	Award	An Efficiency Computer for Heated or Air Conditioned Buildings
0307	Award	Vortex Generators for Aft Regions of Aircraft Fuselages
0308	Award	Binary Azeotropic, Hot Gas, Fat Extraction Process
0309	Analysis	Process of Smelting with Submerged Burner
0310	Award	Portable Wastewater Flow Metering Device
0311	Analysis	Auxiliary Truck Heater
0312	Complete	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
0313	Complete	Process Controller for Stripper Oil Well Pumping Units
0314	Award	Rolling Filter Apparatus
0315	Award	Method of Processing Biodegradable Organic Material
0316	Complete	Thrust Impact Rock Splitter
0317	Procurement	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
0318	Award	Bi-Polar Electrode for Hall-Heroult Electrolysis
0319	Award	Removal of Hydrogen Sulfide from a Gas Stream
0320	Analysis	Coal Gasification with Carbon Dioxide and Lime Recycling
0321	Analysis	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
0322	Award	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
0323	Award	Rolling Mill for Reduction of Moisture Content in Waste Material
0324	Award	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
0325	Award	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
0326	Award	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
0327	Award	Square Pattern Irrigation Sprinkler
0328	Award	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
0329	No DOE Support	Modularized Pneumatic Tractor with Debris Liquifier
0330	Award	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
0331	Award	Cyclic Char Combustion for Engines, Boilers and Gasifiers
0332	Decision Phase	Volk Pistachio Huller
0333	Award	Laser Based Machine for Die and Prototype Manufacturing
0334	Decision Phase	So-Luminaire Natural Daylighting Unit
0335	Decision Phase	Robotic Bridge Observation and Information System
0336	Award	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
0337	Award	An Air Operated Hydraulic Power Unit

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0338	Complete	Downhole Pneumatic Turbine Motor for Geothermal Energy
0339	No DOE Support	Recycoil II
0340	Award	Separation of Adsorbed Components by Variable Temperature Desorption
0341	Award	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials
0342	Award	Raw Fines Medium Coal Washing System
0343	Analysis	Electronic Octane
0344	Award	Machine for Separating Concrete from Steel
0345	Award	Tulleners Wave Piercer
0346	Award	Ultra-Pure Water System for Hospitals
0347	Award	Oxide Dispersion Strengthened Aluminum Alloys
0348	Award	Hydrogen Sulfide Removal for Natural Gas
0349	Analysis	Three Roll Tension Stand
0350	Award	Method and Apparatus for Testing Soil
0351	Award	Flash Gate Board
0352	Award	A Waterjet Mining Machine
0353	Analysis	Compu-Turbo-Aligner
0354	Award	Preparation of Biliquid Foam Compositions
0355	Analysis	Energy-Efficient Ice Cube Making Machine
0356	Award	Portable Automatic Firewood Processor
0357	Award	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
0358	Decision Phase	Device for Well Site Monitoring and Control of Rod-Pumped Wells
0359	Award	Solid Fuel Hot Air Furnace
0360	Analysis	Temperature Controllable Heat Valve
0361	Analysis	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations
0362	Award	Improved Solvents for the Puraq Seawater Desalination Process
0363	Award	Impactor Separator
0364	Award	Intermittant Solar Ammonia Absorption Cycle (ISAAC)
0365	Analysis	Safety Stovepipe Damper Assembly
0366	Award	High Energy Semiconductor Switch
0367	Award	Disintegration of Wood
0368	Analysis	Aircraft Minimum Drag Speed System
0369	Decision Phase	"Fire Jet" Automatic Anthracite Burner
0370	Analysis	Dehumidification System for Indoor Pools and Other High Humidity Areas
0371	Analysis	Wallace Energy Systems Solar Assisted Heat Pump Water Heater
0372	Analysis	FS 630 Heat Pump Thermostat Control
0373	Decision Phase	Tobacco Harvesting Machine
0374	Analysis	Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines
0375	Analysis	MDT Twister
0376	Analysis	Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0377	Award	A Novel Method of Producing Ice-Water Slurries
0378	Analysis	An Improved Cutter for Plaster Board and the Like
0379	Procurement	Inner Roof Solar System
0380	Analysis	Blow-In Blanket System
0381	Analysis	Multiple Heat-Range Spark Plug
0382	Analysis	System for Recovery of Waste Hot Water Heat Energy
0383	Award	Electro-Optic Inspection of Heat Exchangers
0384	Award	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
0385	Analysis	Process for Treating Humus Materials
0386	Award	Device and Method to Enable Detection and Measurement of Deformities in Well Components
0387	Award	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
0388	Analysis	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
0389	Analysis	Reduced Size Heating Assembly for an Electric Stove
0390	Analysis	Wicks Efficient Fuel Utilization System
0391	Analysis	Compressed Gas Energy Storage
0392	Analysis	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
0393	Procurement	Method and Apparatus for Ultrasonic Testing of Tubular Goods
0394	Analysis	Variable Wall Mining Machine
0395	Analysis	Holland Oil Well Pumping System
0396	Analysis	Dyna Flow
0397	Analysis	In Service Tank Bottom Leak Detection and Repair System
0398	Analysis	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
0399	Award	Hydrodynamic/Multi Deflection Pad Bearing
0400	Analysis	Continuous Casting and Inside Rolling of Hollow Rounds
0401	Award	A Miniature, Inexpensive Oxygen-Sensing Element
0402	Analysis	KTM Logger
0403	Analysis	Enterprise Lubricator
0404	Analysis	Steam-Methand Reforming in Molten Carbonate Salt
0405	Analysis	Prehydrolysis and Digestion of Plant Material
0406	Award	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
0407	Analysis	An Extended Range Tankless Water Heater
0408	Procurement	Floodshield System
0409	Analysis	Self-Dressing Resistance Welding Electrode
0410	Analysis	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
0411	Analysis	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No.	STATUS	TITLE
0412	Analysis	Meta-Lax Stress Relief for Almost any Size Metal Structure
0413	Analysis	Non Metallic Railroad Switch Covers
0414	Analysis	Low Profile Fluid Catalytic Cracker
0415	Analysis	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensable Gas
0416	Analysis	Self-Contained Pipe Freezing Unit
0417	Analysis	Rotary Drill Bit
0418	Analysis	Use of Chemical Vapor Deposition to Coat Metal Surfaces with High Temperature Superconducting Materials
0419	Analysis	A Planing Machine to Produce Ultra-Fine Coal
0420	Analysis	The Utah Transmission/Continuously Variable Speed Wind Generator
0421	Analysis	Flexible Drill Pipe
0422	Award	High Efficiency Ozone Generating System
0423	Analysis	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
0424	Analysis	An Automated Process for Garment Manufacturers
0425	Analysis	High Temperature Condensing Biomass Combustion System
0426	Analysis	Eddy Current Transducing System
0427	Analysis	Non-Catalytic Steam Hydrolysis of Fats
0428	Analysis	Uni-Frac Column and T-By Tray
0429	Analysis	A Low Cost Galloping Indicator
0430	Analysis	Whitten Dugas Mud Pump Enhancer
0431	Analysis	Method and Apparatus for Removing Excess Water from Subterranean Wells.
0432	Analysis	Water Hammer Pile Driver
0433	Analysis	Improved Methods to Manufacture and Use Carbon-Alumina Composite Anodes for Aluminum Reduction
0434	Analysis	Modular Apparatus for Laundry Dryer Heat Recovery
0435	Analysis	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
0436	Analysis	The Russell Self-Piloted Check Valve
0437	Analysis	Steam Generator With Integral Down-Draft Dryer
0438	Analysis	Microwave Reflection by Synthetic Metals
0439	Analysis	Project Twenty-One Rapid Transit System
0440	Analysis	Microtube Strip Heat Exchanger
0441	Analysis	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby
0442	Analysis	Long Life "PC" Drill Bit
0443	Analysis	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
0444	Analysis	Apparatus and Method for Using Microwave Radiation to Measure water Content of a Fluid

3.2 Brief Descriptions of Recommended Inventions

The following presents brief descriptions of each of the inventions recommended by the Office of Energy Related Inventions at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The address of the contact is provided if an award has been made. The descriptions are presented in DOE number sequence. Section 4 presents three cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, Contact name, and invention classification.

DOE No: 0011 DOE Coord: D. G. MELLO

Title: Solar Collector

Description: This is a composite extruded aluminum section -- incorporating a cylindrical absorption tube that carries the working fluid. The collector surface is in the form of an Archimedes Spiral and a parabolic curve to maximize the collection angle and eliminate the need to reposition the collector.

Inventor: Ronald H Smith
State : CAContact:
Ronald H Smith
150 Green Street
San Francisco CA 94111
415-398-6813

Status: Complete Status Date: 11/19/80 OERI No.: 000233

Patent Status : Not Applied For
Development Stage : Production Engineering
Technical Category: Direct SolarRecv by NBS : 09/09/75
Recom. by NBS : 09/29/76
Award Date : 05/17/78 Award Amount: \$ 46,884 Grant No: EM78-G019214
Contract Period: 05/17/78 - 11/19/80

Summary: A grant of \$46,884 was awarded to Solergy, Inc., to initiate a series of marketing studies to determine the attitudes of Western U.S. manufacturers, distributors and designers, regarding prospects for successful installation of passive solar systems in new buildings. Survey results were used by Solergy to aid their marketing and manufacturing plans. Company is now out of business.

DOE No: 0012 DOE Coord: G. K. ELLIS

Title: High Frequency Energy Saving Device

Description: This invention consists of a high-frequency generator, to excite one of several fluorescent lights, replacing the normal ballast transformer, and allowing the system to operate at substantially higher efficiency.

Inventor: Frank R Summa
State : NYContact:
Thomas J Russo
100 Forest Avenue
Staten Island NY 10310
212-273-0248

Status: Complete Status Date: 12/31/82 OERI No.: 000448

Patent Status : Patent Applied For
Development Stage : Engineering Design
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 10/28/75
Recom. by NBS : 09/30/76
Award Date : 12/31/80 Award Amount: \$ 30,000 Grant No:
Contract Period: 12/31/80 - 12/31/82

Summary: A grant of \$30,000 was awarded to engage the services of Niesi-Fitzmaurice and Associates, Inc., to conduct a marketing study and prepare a preliminary business plan for the purpose of commercializing the technology.

DOE No: 0013 DOE Coord: P. M. HAYES

Title: Anti-Pollution System

Description: This device utilizes a high speed turbine to refine exhaust gases and recirculate the unburned portions of that gas to the engine.

Inventor: Ranendra K Bose
State : VA

Contact:
Ranendra K Bose
14346 Jacob Lane
Centreville VA 22020
703-266-2379

Status: Complete Status Date: 01/03/79 OERI No.: 000053

Patent Status : Patent # - 3861142
Development Stage : Limited Production/Marketing
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/03/75
Recom. by NBS : 09/30/76
Award Date : 04/04/78 Award Amount: \$ 40,000 Grant No: EM77-G014222
Contract Period: 04/04/78 - 01/03/79

Summary: A grant of \$40,000 was awarded, and a prototype was built and tested. Project goals were met. Final Report was accepted. Inventor plans to seek private assistance for commercialization.

DOE No: 0014 DOE Coord: G. K. ELLIS

Title: Aerodynamic Lift Translator

Description: This device is a wind-activated power generating system intended to provide large power outputs in regions where the prevailing wind direction does not vary appreciably during the year. The device also has application in low-head hydro.

Inventor: Daniel J Schneider
State : TX

Contact:
Daniel J Schneider
Route #1, Box #81
Justin TX 76247
817-430-0174

Status: Complete Status Date: 01/11/79 OERI No.: 000146

Patent Status : Not Applied For
Development Stage : Production Engineering
Technical Category: Other Natural Sources

Recv by NBS : 08/15/75
Recom. by NBS : 09/30/76
Award Date : 01/11/78 Award Amount: \$ 50,000 Grant No: EG-77-G01-7114
Contract Period: 01/11/78 - 01/11/79

Summary: A grant of \$50,000 was awarded to develop performance and cost data for the "Schneider Aerodynamic Power Generator". The inventor is currently pursuing the hydro application, and asked for program assistance in obtaining venture capital. The translator still requires technical development.

DOE No: 0015 DOE Coord: D. G. MELLO

Title: Estacron

Description: Estacron consists of an aggregate of Portland cement, fly ash, stack dust, and polyethylene. It has significant potential as a light-weight and energy-conservative construction material.

Inventor: Dante A Raponi
State : NC

Contact:
James L Bullock
Suite #403, Minges Building
P. O. Box #7151
Greenville NC 27834
919-752-1138

Status: Complete Status Date: 09/28/79 OERI No.: 000393

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Buildings, Structures & Components

Recv by NBS : 10/28/75
Recom. by NBS : 09/30/76
Award Date : 09/28/79 Award Amount: \$101,388 Grant No: FG01-79IR10221
Contract Period: 09/28/79 - 01/31/82

Summary: A grant of \$101,388 was awarded to conduct an application engineering and economic analysis of the material, Estacron, in order to assess its material characteristics and to recommend product applications. Results appear indeterminate. Inventor seeks funding for pilot plant design.

DOE No: 0016 DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Vacuum Drying of Commodities

Description: This invention describes a new method of drying commodities, primarily applicable to such grains as corn, rice, and soybeans, by alternately exposing the commodities to dry heated air and to a vacuum.

Inventor: John W Bruce
State : SD

Contact:
John W Bruce
West Highway, #16
Mitchell SD 57301
605-996-8335

Status: Complete Status Date: 03/30/81 OERI No.: 000486

Patent Status : Patent # - 3914874
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv by NBS : 10/10/75
Recom. by NBS : 11/30/76
Award Date : 03/30/80 Award Amount: \$ 52,917 Grant No: FG01-78IR04211
Contract Period: 03/30/80 - 03/30/81

Summary: A grant of \$52,917 was awarded to design, fabricate, and demonstrate a device for efficiently drying agriculture commodities. The Montana Energy and MHD Development Institute is managing the technical aspects of the program. In addition, the inventor received \$32,000 to dry whey from a private sector source. Results from all tests appear indeterminate. Inventor is interested in selling or licensing patent rights and has ceased work on the technology.

DOE No: 0017 DOE Coord: D. G. MELLO

Title: Osmotic-Hydro Power Generation

Description: The invention uses a reverse osmosis to produce high pressure liquid that can subsequently be passed through a hydraulic turbine to produce electric power.

Inventor: David W Doyle
State : VAContact:
David W. Doyle, V.P.
Intertechnology Corp.
100 Main Street
Warrenton VA 22186

Status: Complete Status Date: 05/01/78 OERI No.: 000619

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Other Natural SourcesRecv by NBS : 01/21/76
Recom. by NBS : 01/14/77
Award Date : 08/11/77 Award Amount: \$ 48,950 Grant No: EG77-G014066
Contract Period: 08/11/77 - 05/01/78

Summary: A grant of \$48,950 was given for research and development of membranes suitable for use in a "Osmo-Hydro Power" system. Studies included membrane long-term effects, polarization dilution, and concentration. The research was judged as high quality by the cognizant DOE program office.

DOE No: 0018 DOE Coord: G. K. ELLIS

Title: The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy

Description: The production of Al "killed" steel is intended to be controlled by the use of Fe-Al alloys instead of Al and by the use of oxygen probes to control the amounts of Al or oxygen in the melt.

Inventor: G R Fitterer
State : PAContact:
G R Fitterer
P.O. Box #206
Oakmont PA 15139
412-828-0233

Status: Complete Status Date: 09/14/78 OERI No.: 000177

Patent Status : Patent # - 3773641 and others
Development Stage : Production & Marketing
Technical Category: Industrial ProcessesRecv by NBS : 08/01/75
Recom. by NBS : 01/31/77
Award Date : 09/14/77 Award Amount: \$ 99,600 Grant No: EC77-G-01-5034
Contract Period: 09/14/77 - 09/14/78

Summary: A grant of \$99,600 was awarded for a system to conserve energy by monitoring and controlling the amount of oxygen in a low carbon aluminum killed steel melt. The system was highly successful. On basis of the success, the steel company involved has initiated a research effort to apply the technology to other ferro melts. The technology is reported to have saved a steel company, doing \$18 million/yr business from bankruptcy.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0021 DOE Coord: G. K. ELLIS

Title: Waste Oil Utilization System

Description: This invention would utilize existing emulsification machinery to add a mixture of used lubricating oil and water to fuel oil used in large power plant boilers. Key point is the use of existing additives in fuel oil to prevent boiler tube deposits.

Inventor: Robert S Norris
State : MA

Contact:
Robert S Norris
Energy Conservation Systems
Ten Starboard Way
Box #472
West Dennis MA 02670
617-398-3430

Status: Complete Status Date: 03/30/81 OERI No.: 000613

Patent Status : Patent # - 3002826 and others
Development Stage : Production & Marketing
Technical Category: Industrial Processes

Recv by NBS : 08/25/75
Recom. by NBS : 02/28/77
Award Date : 03/30/80 Award Amount: \$ 50,000 Grant No: EM78-G-01-4261
Contract Period: 03/30/80 - 03/30/81

Summary: A grant of \$50,000 was awarded for the purpose of a market survey for use of waste automotive crankcase lubricating oil as a fuel additive to prevent boiler tube deposits, augment energy availability, and minimize environmental pollution. Utility plants, the prime potential user, were found to have little incentive to purchase the cheaper additive. Product available for licensing.

DOE No: 0022 DOE Coord: D. G. MELLO

Title: Fuel Burner Attachment

Description: Device to reduce oil consumption by introducing air to oil stream of the burner.

Inventor: Herbert G Lehmann
State : CT

Contact:
Herbert G Lehmann

Status: No DOE Support Status Date: 09/19/77 OERI No.: 000537

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Buildings, Structures & Components

Recv by NBS : 12/29/75
Recom. by NBS : 02/28/77

Summary: The inventor had his device tested without DOE funding by a private contractor and advised DOE that these tests demonstrated his device to be unsuccessful and that he is withdrawing his device from DOE consideration.

DOE No: 0023 DOE Coord: D. G. MELLO

Title: Microgas Dispersions

Description: Device consists of a motor, pump, bubble machine, and valves, uses #2 fuel oil, compressed air, surfactant, to maintain bubbles. Resulting mixture burns like natural gas, which burner can use interchangeably, thereby allowing industrial burners to switch fuels. Can also use small amounts of coal dust in the mixture.

Inventor: Int'l MGD Companies
State : MIContact:
James E Luber

Status: No DOE Support Status Date: 10/24/78 OERI No.: 000951

Patent Status : Patent # - 3900420
Development Stage : Laboratory Test
Technical Category: Other Natural SourcesRecv by NBS : 12/22/75
Recom. by NBS : 03/28/77

Summary: Brookhaven National Laboratory agreed to test the burner but advised on June 17, 1977, that they were unable to contact the inventor. An attorney representing the company stated in a letter dated November 10, 1977, that he wished to delay all actions until January 1978 pending resolution of patent related negotiations. On October 24, 1978, DOE advised inventor that support was terminated due to lack of response to repeated inquiries.

DOE No: 0024 DOE Coord: G. K. ELLIS

Title: Can and Bottle Crushing Apparatus

Description: The invention consists of a portable trailer-mounted device for crushing cans and bottles thereby increasing the density of the scrap, making handling more efficient.

Inventor: Drew W Morris
Country :Contact:
Drew W Morris

Status: Complete Status Date: 05/07/81 OERI No.: 000819

Patent Status : Patent Applied For
Development Stage : Production Engineering
Technical Category: Industrial ProcessesRecv by NBS : 03/22/76
Recom. by NBS : 03/30/77
Award Date : 05/07/80 Award Amount: \$ 35,000 Grant No: EC77-G-01-5090
Contract Period: 05/07/80 - 05/07/81

Summary: A grant of \$35,000 was awarded to construct and operate five mobile can-and-bottle crushers, and assemble data on the machine's efficiency and reliability. No final report has been received. DOE unable to locate the inventor.

DOE No: 0025

DOE Coord: J. AELLEN

Title: Sulfur Removal from Producer Gas-High Temperature

Description: The concept envisions the removal of hydrogen sulfide from a high temperature "reducing gas" stream using two scrubbing stages in series, a molten carbonate salt bath and a molten copper bath, each complete with a continuous regeneration cycle.

Inventor: Donald C Erickson
State : MDContact:
Donald C Erickson
Energy Concepts Co.
1704 South Harbor Lane
Annapolis MD 21401
301-266-6521

Status: Complete

Status Date: 07/09/83

OERI No.: 000002

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 05/07/75

Recom. by NBS : 04/06/77

Award Date : 07/09/81 Award Amount: \$ 91,032 Grant No: FG01-81CS15059

Contract Period: 07/09/81 - 07/09/83

Summary: An award of \$91,032 was given to conduct a research program to establish the technical and economic feasibility of a hot fuel gas desulfurization. Inventor has been successful in generating \$4 million follow-on financing on this and DOE No. 0003. This project has been completed.

DOE No: 0026

DOE Coord: D. G. MELLO

Title: Compact Energy Reservoir

Description: A room-heating convector which stores energy in eutectic salts and radiates the heat to the room under thermostatic control.

Inventor: Seymour Jarmul
State : NYContact:
Seymour Jarmul
96 Windsor Gate
North Hills NY 11040
516-365-9886

Status: Complete

Status Date: 10/26/79

OERI No.: 000782

Patent Status : Not Applied For
Development Stage : Prototype Test
Technical Category: Miscellaneous

Recv by NBS : 03/17/76

Recom. by NBS : 04/12/77

Award Date : 08/02/78 Award Amount: \$ 20,740 Grant No: EU78-G016499

Contract Period: 08/02/78 - 05/02/79

Summary: A grant of \$20,740 was awarded for a 9 month project. Inventor designed, constructed and functionally tested a prototype CER suitable for heating a 375 sq.ft. room in a well-insulated house similar to Solar One at the University of Delaware. DOE decided it was not necessary to subsequently subject the device to quantitative tests. A qualitative assessment was given to the inventor for his consideration.

DOE No: 0029

DOE Coord: D. G. MELLO

Title: Tuned Sphere Stable Ocean Platforms

Description: This invention presents a unique design approach for an ocean platform, by which the body's natural tendency to roll with wave excitation is diminished or offset.

Inventor: Kenneth E Mayo
State : NH

Contact:
Kenneth E Mayo
Tuned Sphere Intl., Inc
111 Lock Street
Nashua NH 03060

Status: Complete

Status Date: 02/06/79

OERI No.: 000800

Patent Status : Patent # - 3837308 and others
Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv by NBS : 12/18/75

Recom. by NBS : 05/10/77

Award Date : 09/30/77

Contract Period: 09/30/77 - 06/30/78

Award Amount: \$ 90,000 Grant No: EF77-G-01-6175

Summary: An award of \$90,000 was granted for a nine (9) month study program to test vessel models, list pertinent parametric data, produce motion picture evidence of vessel stability, and provide reduced graphical data. Completion date was extended to August 1978, at no cost to allow for extension of tank tests and subsequent data reduction. Final report has been received and accepted. Company obtained an additional \$200,000 from R & D sales.

DOE No: 0030

DOE Coord: G. K. ELLIS

Title: Method of Removing Sulfur Dioxide from Flue Gases

Description: Embodies the scrubbing of flue gases with an aqueous solution of metal salt.

Inventor: Leopold Pessel
State : PA

Contact:
Ken Walmer
AEL-EMTEC Corp.
P.O. Box #507
Lansdale PA 19446
215-822-2929

Status: Complete

Status Date: 03/01/83

OERI No.: 000482

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 12/08/75

Recom. by NBS : 05/17/77

Award Date : 03/01/82

Contract Period: 03/01/82 - 03/01/83

Award Amount: \$ 94,150 Grant No:

Summary: A grant of \$94,150 was awarded to 1) conduct a laboratory-scale testing program to further clarify the basic chemical reactions of the process in controlled but realistic environments, and 2) to provide background material for an economic analysis of the process. The results appear promising. Now, with the death of the inventor, technology is available for licensing or outright sale.

DOE No: 0031

DOE Coord: G. K. ELLIS

Title: Ceramic Rotors and Vanes

Description: Technique for fabricating turbine rotors that will operate at high temperatures, thereby making it possible to operate at higher efficiencies.

Inventor: James C Withers
State : VA

Contact:
Richard E Engdahl
Deposits and Composites, Inc.
318 Victory Drive
Herndon VA 22070
703-471-9310

Status: Complete

Status Date: 02/01/85

OERI No.: 000275

Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Combustion Engines & Components

Recv by NBS : 09/19/75
Recom. by NBS : 05/24/77
Award Date : 05/24/78 Award Amount: \$131,250 Grant No: FG01-85CE15214
Contract Period: 05/24/78 - 02/01/85

Summary: A grant (\$62,500 for each of two years) was awarded for the grantee to conduct a research program designed to improve the material properties of his Chemical Vapor Deposition (CVD) material for use in energy-related applications. A variety of Chemical Vapor Deposition products are resulting. Entrepreneur is interested in licensing and/or forming and financing R & D limited partnerships. DOE inventions program is assisting by identifying financial resources. An additional \$6,250 was awarded on April 15, 1985.

DOE No: 0032

DOE Coord: D. G. MELLO

Title: Wood Gas Reactor

Description: The device produces a fuel gas from wood suitable for use in existing gas or oil-fired combustion equipment.

Inventor: Robert A Caughey
State : NH

Contact:
John C Calhoun, President
Forest Fuels, Inc.
P.O. Box #207
Antrim NH 03440
603-876-3353

Status: Complete

Status Date: 03/16/81

OERI No.: 001174

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Fossil Fuels

Recv by NBS : 08/09/76
Recom. by NBS : 05/26/77
Award Date : 05/24/79 Award Amount: \$ 49,405 Grant No: FG01-79IR10171
Contract Period: 05/24/79 - 03/16/81

Summary: A grant of \$49,405 was awarded and completed, to design and build a gasifier system to produce gaseous fuel from biomass. The unit is being used to demonstrate the practical use of alternate fuels in existing industrial boiler installations, and is in demonstration service at Forest Fuel Technical Center in Antrim, NH. About 30 units sold at \$100,000 to \$200,000 each as of Nov, 1982. The business is reported to be successful and employs twenty-five.

DOE No: 0051 DOE Coord: J. AELLEN
Title: Thermal Efficiency Construction
Description: A method for building on energy-efficient residence,
 incorporating a counterflow heat exchanger, double-wall
 insulation, and other unique features. Copyright plans sold under
 license.
Inventor: Richard B Bentley Contact:
State : NY Richard B Bentley
Status: No DOE Support Status Date: 07/31/78 OERI No.: 001116
Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components
Recv by NBS : 03/19/76
Recom. by NBS : 12/20/77
Summary: In July '78 inventor advised DOE of his intention to prepare a
 proposal. Nothing has been received to date. Inventor reported he
 had applied for a grant under the Appropriate Technology Program.
 DOE support cannot be considered without a proposal from the
 inventor, or his or her agent.

DOE No: 0052 DOE Coord: G. K. ELLIS
Title: Air Wedge
Description: The device is an aerodynamic drag device for use with trucks,
 mounted on the front face of the trailer or the cargo box.
Inventor: Robert G Landry Contact:
State : ME Sherman R Jenney
Status: No DOE Support Status Date: 11/28/79 OERI No.: 000172
Patent Status : Patent # - 3740320
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & Components
Recv by NBS : 08/13/75
Recom. by NBS : 12/21/77
Summary: On November 28, 1979, the inventor was advised that there is no
 basis for DOE support because there are devices already installed
 on trucks on the highway, which accomplish the same purpose.

DOE No: 0053 DOE Coord: G. K. ELLIS

Title: High Efficiency Water Heater

Description: A direct contact, gas-fired hot water heater that can extract the latent heat of the water vapor formed during combustion.

Inventor: Harry E Wood
State : LAContact:
Harry E Wood
6465 Oakland Drive
New Orleans LA 70118
504-488-7853

Status: Complete Status Date: 03/01/79 OERI No.: 002070

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 04/15/77
Recom. by NBS : 12/23/77
Award Date : 03/01/78 Award Amount: \$ 72,600 Grant No: EM78-G-01-4255
Contract Period: 03/01/78 - 03/01/79

Summary: A grant of \$72,600 was awarded to install a direct contact gas fired hot water heater in a new 210-unit apartment building, and measure the system characteristics, efficiency and reliability. The results of this DOE support, and some free publicity on a national CBS program shortly thereafter, have materially assisted the inventor in marketing the technology. At last account, Kemco Co., Milwaukee, exclusive licensee, had sold 67 units (altogether saving 0.5 billion cu-ft gas/year), 48 in the last year, at \$30,000 each, with 30 more on order.

DOE No: 0054 DOE Coord: D. G. MELLO

Title: Optimizer

Description: A closed-loop electronic ignition for automobile engines. Spark advance is optimized for maximum power output, and minimum fuel consumption.

Inventor: Paul H Schweitzer
State : PAContact:
Edward Perry Sikes, Jr.
Optimizer Control Corp.
Suite #104, 201 Burnside Pkwy
Burnsville MN 55337
612-894-3610

Status: Complete Status Date: 06/15/81 OERI No.: 001355

Patent Status : Patent # - 3974412 and others
Development Stage : Working Model
Technical Category: Combustion Engines & ComponentsRecv by NBS : 08/25/76
Recom. by NBS : 01/11/78
Award Date : 09/01/78 Award Amount: \$ 88,895 Grant No: EU78-G016602
Contract Period: 09/01/78 - 06/18/81

Summary: A grant of \$88,895 for one-year program was awarded and completed to design, develop, fabricate and test a pilot model of the Optimizer. Pennsylvania State University sub-contracted electronic design tasks and analytical evaluation. First progress report indicated that prototype performed as predicted. Penn. State Univ. has been assigned greater role in development of instrumentation and additional test units. Final results showed insufficient improvement to warrant further development.

DOE No: 0055 DOE Coord: J. AELLEN

Title: Electrically Heated Sucker-Rod

Description: An electric heater is the sucker rod used to drive a pump at the bottom of an oil well, intended to prevent paraffin from congealing and restricting flow, thus avoiding consequent costly maintenance cleanout.

Inventor: Richard D & Chester Palone Contact:
State : AR Richard D Palone

Status: No DOE Support Status Date: 12/29/80 OERI No.: 002523

Patent Status : Patent # - 3859503
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv by NBS : 07/22/77
Recom. by NBS : 01/30/78

Summary: This invention received a favorable review within DOE. During the last contact with the inventor, he said he had located an interested subcontractor and would soon be submitting a proposal requesting a DOE grant. Then, on December 29th, 1980 he advised that he no longer needed a grant.

DOE No: 0056 DOE Coord: G. K. ELLIS

Title: Flexaflo-The Wet Fuel Dryer

Description: A dryer/boiler using sugar cane waste (bagasse) for fuel; exhaust gases from process are used to "pre-dry" fuel prior to entering boiler.

Inventor: William P Boulet Contact:
State : LA Jay Dornier
Quality Industries
P. O. Box #406
Thibodoux LA 70301
504-447-4021

Status: Complete Status Date: 12/29/80 OERI No.: 002238

Patent Status : Patent # - 3976018
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 05/24/77
Recom. by NBS : 03/31/78
Award Date : 12/29/79 Award Amount: \$111,220 Grant No: EU78-G-01-6593
Contract Period: 12/29/79 - 12/29/80

Summary: A grant of \$111,220 was awarded to Quality Industries to modify design of existing bagasse dryer in sugar cane refinery to control airborne bagacillio to enable bagasse to replace oil-gas as alternate fuel for dryer. Results indeterminate due to poor industry economic conditions which tended to interfere with fair appraisal. Further testing needed to prove concept. Quality is interested in forming and financing R & D limited partnership in another industry with the same technology.

DOE No: 0063 DOE Coord: J. AELLEN

Title: Fluorobulb

Description: Fluorescent bulb designed to directly replace an incandescent bulb. 20 watt bulb and ballast can be easily separated. Built on Edison screwbase.

Inventor: Thomas LoGiudice
State : NYContact:
Thomas LoGiudice
520 East 72d Street
New York NY 10021
212-737-6703

Status: Complete Status Date: 08/18/81 OERI No.: 001330

Patent Status : Patent # - 3953761
Development Stage : Prototype Development
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 08/13/76
Recom. by NBS : 05/03/78
Award Date : 04/11/79 Award Amount: \$ 49,500 Grant No: FG01-79IR10093
Contract Period: 04/11/79 - 08/01/81

Summary: A grant of \$49,500 was awarded and completed for research and product development. Grantee produced ten prototype bulbs, investigated problems of uniform coating, and produced certified data regarding lamp efficiency, luminous efficiency and accurate cost data for predicting production quantity costs. Data suggests that lamp is not likely to be manufactured at a competitive price.

DOE No: 0064 DOE Coord: G. K. ELLIS

Title: The Mahalla Process--A Hydrometallurgical Method for Extracting Copper

Description: A hydrometallurgical process for refining copper that eliminates the electrofining step.

Inventor: Shalom Mahalla
State : AZContact:
Lester Hendrickson
Arizona State U.
School of Engineering
Tempe AZ 85281
602-965-3764

Status: Complete Status Date: 09/01/79 OERI No.: 002543

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial ProcessesRecv by NBS : 08/01/77
Recom. by NBS : 05/08/78
Award Date : 09/01/78 Award Amount: \$ 88,933 Grant No:
Contract Period: 09/01/78 - 09/01/79

Summary: A grant of \$88,933 was awarded and the work completed, to develop and optimize the process variables on a laboratory scale. With the copper industry depressed, the technology is being adapted for industrial toxic waste recovery. At last account, Hendrickson sought \$500,000 to build a pilot plant having enough flexibility to be adaptable to the processing of feed sources from various industrial plant wastes.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0065 DOE Coord: J. AELLEN

Title: WattVendor

Description: A coin operated device for dispensing electricity.

Inventor: Lee A Henningsen
State : PA

Contact:
Lee A Henningsen
Firetrol, Inc.
1617 Cascade Street
Erie PA 16502
814-459-1770

Status: Complete Status Date: 09/10/79 OERI No.: 000741

Patent Status : Not Applied For
Development Stage : Prototype Test
Technical Category: Miscellaneous

Recv by NBS : 02/18/76
Recom. by NBS : 05/12/78
Award Date : 09/14/79 Award Amount: \$ 55,800 Grant No: FG01-79IR10266
Contract Period: 09/14/79 - 12/31/80

Summary: A grant of \$55,800 was awarded and completed, to manufacture and install sufficient units to completely convert Hillman Ferry Campground (TVA operated) from free to metered electric service. TVA will record user reactions, electric usage before and after, and operate units in one year demonstration program.

DOE No: 0066 DOE Coord: D. G. MELLO

Title: Heat Extractor

Description: A system for recovering "Waste Heat" from industrial combustion processes by using water in direct contact with combustion products and an auxiliary heat exchanger.

Inventor: Philip Zacuto
State : NY

Contact:
Daniel Ben-Shmuel
Heat Extractor Corporation
P.O. Box #455
Johnstown NY 12095
518-568-2288

Status: Complete Status Date: 09/29/78 OERI No.: 002277

Patent Status : Not Applied For
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 06/20/77
Recom. by NBS : 05/26/78
Award Date : 09/29/78 Award Amount: \$125,000 Grant No: EU78-G016677
Contract Period: 09/29/78 - 09/29/79

Summary: A grant of \$125,000 was awarded and completed to install, operate and test, a heat extractor in an operating paper mill with Mohawk Paper Mills, Inc. Included were funds to adapt the heat extractor for coal-fired boilers. The work is complete. Results confirm significant fuel savings. As of January, 1985, inventor had sold the industrial unit to a Pittsburg firm and the residential one to Armitron. The unit is re-engineered and being marketed through Heat Extractor, Inc., Melrose, MA (800-633-3324)

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0069

DOE Coord: G. K. ELLIS

Title: Ionic Fuel Control System for the Internal Combustion Engine

Description: A system for controlling the air-fuel ratio of a gasoline internal combustion engine to maintain lean operation, improved fuel economy, and good performance.

Inventor: Enoch J Durbin
State : NJ

Contact:
Enoch J Durbin
Instrumentation & Control Lab.

Aero Lab., Forrestal Campus
Princeton University
Princeton NJ 08540
609-452-5154

Status: Complete

Status Date: 07/01/80

OERI No.: 000844

Patent Status : Patent # - 3470741
Development Stage : Prototype Development
Technical Category: Combustion Engines & Components

Recv by NBS : 03/25/76
Recom. by NBS : 06/29/78
Award Date : 07/01/79 Award Amount: \$ 87,051 Grant No: FG01-79IR10022
Contract Period: 07/01/79 - 07/01/80

Summary: A grant of \$87,051 was awarded to develop the Ionic Fuel Control System and to assess its commercial feasibility. A successful prototype was developed. Despite much work, the inventor's only success with an automotive company was Chrysler's successful bid on a military contract which incorporated the technology. Adaptation of the device gives wind action in three directions, which could also be critical in determining velocities of STOL aircraft, where there have been a number of landing crashes for lack of this information.

DOE No: 0070

DOE Coord: J. AELLEN

Title: Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner

Description: A heat recovery system for large compressors.

Inventor: Kenneth A Stofen
State : WI

Contact:
Kenneth A Stofen
3642 Country Lane
Racine WI 53405
414-554-7987

Status: Complete

Status Date: 08/08/80

OERI No.: 002847

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Miscellaneous

Recv by NBS : 10/21/77
Recom. by NBS : 06/28/78
Award Date : / / Award Amount: \$ 53,000 Grant No: FG01-79IR10026
Contract Period: / / - / /

Summary: A grant of \$53,000 was awarded to design and build ecology cabinets; and then assemble, operate, and test air cooled compressor systems in environments with particulate-laden and high temperature air. Sold 31 units to various size companies. Expanding his product to include 5 through 2000 HP compressors. Secured GSA contract two years in a row. A new company named Air Systems Inc at 937 Hays Ave., Racine, WI 53405 has been formed to build the units. Trying to expand market through more distributors.

DOE No: 0073

DOE Coord: G. K. ELLIS

Title: INTECH

Description: A system which uses light-weight aggregate insulation to provide the form-work for the concrete structural members of a building, with pre-finished exterior and interior surfaces.

Inventor: Melvin H Sachs
State : MI

Contact:
Melvin H Sachs
ISTECH, INC
29200 Vassar Ave., Suite #700
Livonia MI 48152
313-478-0606

Status: Complete

Status Date: 06/22/79

OERI No.: 001323

Patent Status : Patent # - 3800015 and others
Development Stage : Production & Marketing
Technical Category: Buildings, Structures & Components

Recv by NBS : 08/09/76
Recom. by NBS : 08/10/78
Award Date : 06/22/78 Award Amount: \$ 87,230 Grant No:
Contract Period: 06/22/78 - 06/22/79

Summary: A grant of \$87,230 was awarded for the purpose of contracting with Underwriters Laboratories, Inc. to perform fire tests, and to contract with Lev Zetlin Consultants for structural testing and analysis. This invention won the "outstanding individual inventor" award from the Dvorkovitz Technology Show of 1980. At last account, Sachs was looking for \$2 million private sector money to design machinery for mass production. Some designs have been sold and built.

DOE No: 0074

DOE Coord: D. G. MELLO

Title: A Solid Electrolyte Galvanic Solar Energy Conversion Cell

Description: A high-temperature, high voltage (1.51V) fuel cell utilizing a unique calcium stabilized zirconia solid electrolyte. Device promises high efficiency, minimum environmental problems and wide application. It can also simultaneously produce chemical feedstock.

Inventor: G R Fitterer
State : PA

Contact:
G. R. Fitterer, President
Scientific Applications, Inc.
825 Twelfth Street
Oakmont PA 15139
412-828-0233

Status: Complete

Status Date: 10/30/80

OERI No.: 002560

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Direct Solar

Recv by NBS : 09/19/77
Recom. by NBS : 08/29/78
Award Date : 08/24/79 Award Amount: \$ 50,000 Grant No: FG01-79IR10264
Contract Period: 08/24/79 - 10/30/80

Summary: A grant of \$50,000 was awarded to conduct a two-part research project to investigate the characteristics of his Fuel Cell. Part one is a study of the primary cell and its voltage characteristics. Part two is research leading to selection of the best electrolyte. Results indicate that although workable, advantages over existing fuel cells are not significant.

DOE No: 0075 DOE Coord: G. K. ELLIS

Title: Coke Quenching Steam Generator

Description: The steam generator is a direct contact heat exchanger for generation of process steam from hot coke. Objective: to build new coke ovens.

Inventor: Richard Jablin
State : NCContact:
Richard Jablin
2511 Woodrow Street
Durham NC 27705
919-286-4693

Status: Complete Status Date: 06/03/82 OERI No.: 002265

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial ProcessesRecv by NBS : 06/06/77
Recom. by NBS : 08/29/78
Award Date : 05/14/79 Award Amount: \$119,400 Grant No: FG01-79IR10212
Contract Period: 05/14/79 - 06/03/82

Summary: A grant of \$119,400 was awarded to complete a program of laboratory and pilot plant scale development. The work was successful, with steam quality adequate for process steam, and coke quality superior to the only competing process. Inventor seeks limited partnership arrangement, and anticipates a \$10 million/year business.

DOE No: 0076 DOE Coord: G. K. ELLIS

Title: The Ross Furnace

Description: A new gas burner design for use in high temperature industrial process furnace.

Inventor: Donald R Ross
State : TXContact:
Donald R Ross
3344 South Grove
Fort Worth TX 76110
817-921-9671

Status: Complete Status Date: 05/05/81 OERI No.: 002075

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 04/18/77
Recom. by NBS : 09/18/78
Award Date : 05/05/80 Award Amount: \$ 82,000 Grant No:
Contract Period: 05/05/80 - 05/05/81

Summary: A grant of \$82,000 was awarded to build, assemble, operate and test two systems; one for a tilted furnace and one for a rotary furnace. The work was completed satisfactorily.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0077 DOE Coord: J. AELLEN

Title: Variable Heat Refrigeration System

Description: An improved vapor degreasing system incorporating a heat pump to conserve energy, retain solvents, and reduce hazards associated with solvent vapors.

Inventor: James W McCord
State : KY

Contact:
James W McCord
Corpne Industries, Inc.
250 Production Court
Bluegrass Industrial Park
Louisville KY 40299
502-491-4433

Status: Complete Status Date: 09/23/80 OERI No.: 001173

Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Miscellaneous

Recv by NBS : 08/09/76
Recom. by NBS : 09/25/78
Award Date : 09/23/80 Award Amount: \$ 97,400 Grant No: FG01-80CS15026
Contract Period: 09/23/80 - 06/01/82

Summary: An award of \$97,400 was granted to design and construct demonstration models of the variable heat refrigeration system.

DOE No: 0078 DOE Coord: G. K. ELLIS

Title: System for High Efficiency Power Generation from Low Temperature Sources

Description: Concept for reducing the heat sink temperature in power plant operation and other applications; ice would be generated during cold weather and used to reduce the heat sink temperature during warmer weather.

Inventor: Robert McNeill
State : CA

Contact:
Robert McNeill

Status: No DOE Support Status Date: 03/11/81 OERI No.: 001154

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Other Natural Sources

Recv by NBS : 06/30/76
Recom. by NBS : 09/28/78

Summary: Inventor advised DOE that he is no longer interested in pursuing the invention because of other interests.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0081 DOE Coord: D. G. MELLO

Title: Flash Polymerization

Description: A process utilizing pulsed xenon arc discharge lamps for polymerizing thermosetting resins.

Inventor: C Richard Panico
State : MA

Contact:
C Richard Panico
Xenon Corporation
66 Industrial Way
Wilmington MA 01887
617-658-8940

Status: Complete Status Date: 02/03/81 OERI No.: 002526

Patent Status : Patent # - 3782889
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 07/26/77
Recom. by NBS : 09/29/78
Award Date : 09/29/79 Award Amount: \$ 99,990 Grant No: FG01-79IR1030
Contract Period: 09/29/79 - 02/02/81

Summary: A grant of \$99,990 was awarded and completed, to conduct a 3-part investigation of the energy-saving and market penetration potential for this curing machine. A \$500,000 contract for automotive parts curing was captured as a result of DOE-supported Development work. Several venture capitalists have expressed considerable interest. Sale of the company has been discussed.

DOE No: 0082 DOE Coord: D. G. MELLO

Title: Cool Air Induction

Description: Modification kit for engines used for powering irrigation pumps. Uses cool well water in air cooler placed between commercial supercharger and the engine.

Inventor: Robert L Ullrich
State : NM

Contact:
Robert L Ullrich
Ullrich Eng. & Mfg., Inc.
1717 East Second Street
Roswell NM 88201
505-662-1821

Status: Complete Status Date: 09/24/79 OERI No.: 003061

Patent Status : Not Applied For
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NBS : 11/23/77
Recom. by NBS : 10/27/78
Award Date : 09/24/79 Award Amount: \$ 68,402 Grant No: FG01-79IR10284
Contract Period: 09/24/79 - 04/30/80

Summary: A two-phase grant in the amount of \$99,282 was requested. The first phase was awarded (\$68,402) and provided for analysis of existing operating data, a survey of the potential market, development and comparison of alternate strategies and a preparation of a formal business plan. Product is available for licensing.

DOE No: 0083 DOE Coord: P. M. HAYES

Title: Vertical Solar Louvers

Description: Massive rectangular columns oriented in NE-SW direction, located indoors behind a glazed southern exposure. Aesthetic improvement over conventional TROMBE wall should lead to increased acceptance of passive solar heating.

Inventor: Charles James Bier
State : VA

Contact:
Charles James Bier
Route #2, Box #35
Ferrum VA 24088

Status: Complete Status Date: 02/28/84 OERI No.: 002821

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components

Recv by NBS : 10/17/77
Recom. by NBS : 10/27/78
Award Date : 08/31/82 Award Amount: \$ 26,510 Grant No: FG01-82CE15135
Contract Period: 08/31/82 - 02/28/84

Summary: A grant of \$26,510 was awarded for inventor to prepare test plan, instrumentation strategy, and computer design guide. Final report was delivered September 30th, 1984. Results will be published in several semi-technical journals to encourage the passive solar concept.

DOE No: 0084 DOE Coord: G. K. ELLIS

Title: Kinetic Energy Type Pumping System

Description: Simplified pumping system utilizes the kinetic energy of a circulating fluid to reduce the bottom-hole pressure and to lift the down-hole fluid.

Inventor: Kenneth W Odil
State : TX

Contact:
Kenneth W Odil

Status: No DOE Support Status Date: 09/24/82 OERI No.: 002032

Patent Status : Patent # - 3123009
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 04/11/77
Recom. by NBS : 10/30/78

Summary: A proposal was received from the inventor which was unacceptable because it was considerably beyond the level of support funds that could be justified. The inventor then endeavored to find a cost sharing arrangement with an interested private industry. A 5/13/82 check with him indicated that due to other business interests, Mr. Odil temporarily at least, is not interested in pursuing his invention.

DOE No: 0085 DOE Coord: D. G. MELLO

Title: Dielectric Windowshade

Description: A method by which an applied voltage causes a reflective aluminized mylar film to unroll and press flat against a window.

Inventor: Charles G Kalt
State : MA

Contact:
Charles G Kalt
29 Hawthorne Road
Williamstown MA 01267
413-664-6371

Status: Complete Status Date: 08/18/81 OERI No.: 003691

Patent Status : Patent # - 3989357
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components

Recv by NBS : 04/12/78
Recom. by NBS : 10/31/78
Award Date : 08/18/81 Award Amount: \$ 99,500 Grant No: FG01-81CS15076
Contract Period: 08/18/81 - 11/18/82

Summary: A grant of \$99,500 was awarded and completed, to design, build and test, a demonstration model of the Dielectric Windowshade. A unique product resulted. Test-marketing for commercial greenhouses has been completed.

DOE No: 0086 DOE Coord: G. K. ELLIS

Title: Coke Desulfurization

Description: Method to remove sulfur from high sulfur coal during the coking process, which makes it possible to use high sulfur coals in the manufacture of metallurgical coke. Process can pay for itself with the sulfur by-product.

Inventor: Douglas MacGregor
State : UT

Contact:
Howard Bovars
Diamond Energy Corporation
1012 North Beck Street
Sale Lake City UT 84103
801-359-3718

Status: Complete Status Date: 03/23/81 OERI No.: 002726

Patent Status : Patent # - 4011303
Development Stage : Laboratory Test
Technical Category: Fossil Fuels

Recv by NBS : 09/21/77
Recom. by NBS : 11/27/78
Award Date : 12/07/79 Award Amount: \$ 82,500 Grant No: FG01-80IR10305
Contract Period: 12/07/79 - 09/30/81

Summary: A grant of \$82,500 was awarded for Diamond West Corporation, exclusive licensee, to perform sufficient additional technical, engineering and application investigation, to ready the technology for the marketplace. Licensee, with the help of the inventor, unable to duplicate results of initial experiment. But, Diamond West took a new approach and developed a successful process. \$1.5 million private monies invested to date, and doubling that is anticipated. At last account, Diamond West had tentative plans for joint venture to build a calciner for sale to coke industry.

DOE No: 0089

DOE Coord: D. G. MELLO

Title: Continuous Casting Process and Apparatus

Description: A continuous horizontal casting process for steel billets, slabs, and tubing, which achieves a very high quality product at twice the speed of existing continuous casting processes.

Inventor: Henry E Allen
State : CT

Contact:
Henry E Allen
Techmet Corporation
Fifteen Valley Drive
Greenwich CT 06830
203-629-4633

Status: Complete

Status Date: 07/31/84

OERI No.: 002648

Patent Status : Patent # - 3517725
Development Stage : Prototype Development
Technical Category: Industrial Processes

Recv by NBS : 08/22/77
Recom. by NBS : 11/30/78
Award Date : 07/29/82 Award Amount: \$115,000 Grant No: FG01-82CE15101
Contract Period: 07/29/82 - 07/31/84

Summary: A grant of \$115,000 was awarded to build and test a device for continuous casting of 4-inch bars of steel. The work on this project is complete. The project was generally successful. Lack of interest due to unfavorable economic conditions in steel industry however, prevents its commercialization.

DOE No: 0090

DOE Coord: J. AELLEN

Title: Grain Dryer

Description: A device to be added to a grain combine, to utilize the exhaust energy from the combine engine for drying the grain in the combine hopper tank.

Inventor: Clinton Van Winkle
State : NE

Contact:
Clinton Van Winkle

Status: No DOE Support

Status Date: / /

OERI No.: 003790

Patent Status : Patent # - 4003139
Development Stage : Prototype Development
Technical Category: Industrial Processes

Recv by NBS : 03/16/78
Recom. by NBS : 12/18/78

Summary: Inventor not responsive. No basis for consideration of DOE grant support.

DOE No: 0091 DOE Coord: D. G. MELLO

Title: Mine Brattice

Description: A reusable brattice for use in coal mining. Quick, and inexpensive to install - seals better than present stoppings. Improved air seal saves power and improves safety.

Inventor: James Allen Bagby
State : KYContact:
Rees Kinney, Atty.
Bagby Brattices, Inc.
P.O. Box #569
Greenville KY 42345
502-338-5619

Status: Complete Status Date: 09/20/79 OERI No.: 003210

Patent Status : Patent # - 3972272
Development Stage : Prototype Development
Technical Category: Fossil FuelsRecv by NBS : 12/20/77
Recom. by NBS : 12/19/78
Award Date : 09/29/79 Award Amount: \$ 62,664 Grant No: FG01-79IR10302
Contract Period: 09/29/79 - 05/25/83

Summary: A grant of \$62,664 was awarded and completed to fabricate 25 prototype brattices and install them in Peabody Coal underground coal mine in Southern Illinois. Data were collected and possibly detrimental effects of natural subsidence on the performances of the brattices was measured and found to be minimal. Product advanced rapidly, with sales organization formed and 1982 sales of \$150,000. Product is accepted in the mining industries and is available for distribution. Corporation has doubled sales.

DOE No: 0092 DOE Coord: G. K. ELLIS

Title: Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.

Description: Utilizes common plumbing system with water serving as heat source/sink for heat pumps as well as sprinkler system.

Inventor: John L Carroll
State : KYContact:
Roger Stamper

Status: No DOE Support Status Date: 07/15/86 OERI No.: 001160

Patent Status : Patent # - 3939914
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 03/22/76
Recom. by NBS : 12/28/78

Summary: Inventor has licensed the technology to American Air Filter Co Inc. A grant was declined on the belief that it would compromise the inventor's patent position. At last account, American Air had installed \$22 million of the technology, including \$2 million for equipment and \$20 million for construction, representing 36 jobs. Another 30 were on the drawing board.

DOE No: 0097 DOE Coord: J. AELLEN

Title: Water Drying System

Description: A technique for removing wash water from manufactured parts by dipping parts into degreaser solvent and mechanically separating water by virtue of differences in liquid densities.

Inventor: James W McCord
State : KYContact:
James W McCord
Corpane Industries, Inc.
250 Production Court
Bluegrass Industrial Park
Louisville KY 40299
502-491-4433

Status: Complete Status Date: 09/10/80 OERI No.: 003679

Patent Status : Patent Applied For
Development Stage : Engineering Design
Technical Category: Industrial ProcessesRecv by NBS : 08/09/76
Recom. by NBS : 02/28/79
Award Date : 09/10/80 Award Amount: \$ 93,800 Grant No: FG01-80CS15025
Contract Period: 09/10/80 - 06/10/82

Summary: A grant of \$93,800 was awarded to design and construct demonstration models of a system to degrease and dry metal parts prior to painting. Product is available for custom installation in production lines. The inventor has been successful in marketing his product.

DOE No: 0098 DOE Coord: D. G. MELLO

Title: Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings

Description: A methodology for continuously casting a sheet of the desired bearing alloy, in the desired thickness, cutting it to the proper length, rolling it to the specified diameter, and welding it together.

Inventor: James L Chill
State : OHContact:
James L. Chill, President
Chillcast, Inc.
404 Executive Boulevard
Marion OH 43302
614-383-6337

Status: Award Status Date: 01/07/80 OERI No.: 003547

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Industrial ProcessesRecv by NBS : 02/17/78
Recom. by NBS : 03/14/79
Award Date : 01/07/80 Award Amount: \$123,994 Grant No: FG01-80IR10321
Contract Period: 01/07/80 - 06/30/83

Summary: A grant of \$123,994 was awarded for the grantee to work with Battelle Memorial Institute to optimize the rolling-pass and heat treatment schedules, establish and compare the performance characteristics of the prototype bearings with those made by current methods, evaluate cylindrical bearings with and without a seam weld, and investigate performance of prototypes containing only 3% tin. An entrepreneur is needed to market this invention successfully.

DOE No: 0103

DOE Coord: P. M. HAYES

Title: Low Voltage Ionic Fluorescent Light Bulb

Description: Fluorescent light bulb built on Edison base. Excited by array of gas discharge tubes. Uniform output, high efficiency, and long life are claimed.

Inventor: Edwin E Eckberg
State : IDContact:
Edwin E Eckberg
Ecklux R & D Vacuum Lab Inc
5504 Currier Road
Boise ID 83705
208-343-7442

Status: Complete

Status Date: 09/10/81

OERI No.: 001446

Patent Status : Patent # - 3447098 and others
Development Stage : Engineering Design
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 09/17/76
Recom. by NBS : 04/30/79
Award Date : 03/12/80 Award Amount: \$ 73,554 Grant No: FG01-80CS15007
Contract Period: 03/12/80 - 09/10/81

Summary: A grant of \$73,554 was awarded to design, develop, fabricate and test a series of one, two and four-bulb configuration low-voltage fluorescent ionic light bulbs. The one-bulb version will be developed to a point suitable for semi-automatic machine production. The grant was completed. The inventor is deceased. An entrepreneur is needed to develop further and market this invention.

DOE No: 0104

DOE Coord: G. K. ELLIS

Title: Low Continuous Energy Mass Separation System

Description: The invention is a combination of any two or all three separation techniques involving chromatography, electrophoresis, and centrifugation (common in all combinations) to provide a low-energy continuous separation of chemical species, either in the gas phase or liquid phase.

Inventor: Eskil L Karlson
State : PAContact:
Eskil L Karlson
4634 State Street
Erie PA 16509
814-871-7000

Status: Complete

Status Date: 04/26/81

OERI No.: 002186

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: MiscellaneousRecv by NBS : 05/11/77
Recom. by NBS : 04/30/79
Award Date : 02/26/80 Award Amount: \$ 83,015 Grant No: FG01-80CS15008
Contract Period: 02/26/80 - 04/26/81

Summary: A grant of \$83,015 was awarded to build and test two laboratory models. More development needed but the results encouraging with 90 percent separation each pass at several gal/min throughput. Needs another \$30,000 - \$40,000 for R & D, \$50,000 to build a production prototype, and \$50,000 for an alternate version. Inventor wants connection with company interested in producing a unit to do genetic separations. Potential market at medical schools and labs, around 30,000 units at \$2,000 to \$10,000 per unit.

DOE No: 0111 DOE Coord: P. M. HAYES

Title: Haspert Mining System

Description: The invention is intended for developing rectangular openings for mineral development. It is a mechanical apparatus that cuts linear grooves in rock using drag bits and then breaks the rock between the grooves primarily in the tension mode. Potential applications are in oil shale, rock and possibly coal.

Inventor: John C Haspert
State : CAContact:
John C. Haspert
P.O. Box #1252
Arcadia CA 91006

Status: Complete Status Date: 09/11/81 OERI No.: 003688

Patent Status : Patent # - 4062594
Development Stage : Limited Production/Marketing
Technical Category: Fossil FuelsRecv by NBS : 03/27/78
Recom. by NBS : 06/29/79
Award Date : 03/27/80 Award Amount: \$125,000 Grant No: FG01-80CS15006
Contract Period: 03/27/80 - 06/30/81

Summary: A grant of \$125,000 was awarded to provide a complete set of preliminary design drawings for a prototype machine for "driving" a drift for the mining of oil shale and coal. The cutter produces uniformly sized material at lower costs than present methods. The work was completed and the inventor seeks licensing and/or venture capital.

DOE No: 0112 DOE Coord: D. G. MELLO

Title: Pump

Description: A conventional steam injector to serve as both feedwater pump and direct contact feedwater heater in conventional steam power plants.

Inventor: Paul Zanoni
State : CTContact:
Paul Zanoni
Boulder Engineering, Inc.
Fifty-Five Highland Street
Weathersfield CT 06109
203-569-0446

Status: Complete Status Date: 11/07/85 OERI No.: 000548

Patent Status : Patent # - 3314236
Development Stage : Concept Development
Technical Category: Fossil FuelsRecv by NBS : 12/29/75
Recom. by NBS : 07/26/79
Award Date : 08/03/81 Award Amount: \$ 99,870 Grant No: FG01-81CS15057
Contract Period: 08/03/81 - 11/07/85

Summary: A grant of \$99,870 was awarded to design, build, and install system for field tests at Worcester Polytech in Massachusetts. System will operate in conjunction with existing steam power plant. The inventor complains that he is not getting proper cooperation from Worcester Polytech, making it impossible to complete the project. The project was closed unfinished.

DOE No: 0113 DOE Coord: P. M. HAYES

Title: Wallace Mold Additive System

Description: A device and method for feeding small pieces of metal scrap of known composition and at a fixed rate into a mold, while molten metal is being poured.

Inventor: Henry J Wallace
State : PAContact:
Henry J Wallace
570 Squaw Run Road
Pittsburgh PA 15238
412-963-0969

Status: Complete Status Date: 09/21/83 OERI No.: 003865

Patent Status : Patent # - 3871058 and others
Development Stage : Prototype Development
Technical Category: Industrial ProcessesRecv by NBS : 04/20/78
Recom. by NBS : 07/31/79
Award Date : 09/22/82 Award Amount: \$ 89,000 Grant No: FG01-82CE15093
Contract Period: 09/22/82 - 09/21/83

Summary: A grant of \$89,000 was awarded to build and test a feeding device to be installed on a mini-mill located in Florida. The grant work is completed. The Wallace injection system is patented in the U.S. and many other countries. The inventor is seeking licensing arrangement for his process through Blair-Knox Equipment Division of Blairnox, Pa. 412-781-2700. Blair-Knox Equipment is licensed to supply apparatus for the Wallace Additive Injection System.

DOE No: 0114 DOE Coord: P. M. HAYES

Title: New Energy-Saving Tire for Motor Vehicles

Description: An automobile tire of innovative design intended to reduce rolling friction below that of equivalent radial tires. Special rims are required.

Inventor: Renato Monzini
Country : Milan, ItalyContact:
Mario Bruno

Status: No DOE Support Status Date: 06/19/80 OERI No.: 003863

Patent Status : Patent # -
Development Stage : Prototype Development
Technical Category: Transportation Systems, Vehicles & ComponentsRecv by NBS : 04/20/78
Recom. by NBS : 07/31/79

Summary: DOE could find no basis for support.

DOE No: 0115 DOE Coord: D. G. MELLO

Title: Refrigeration System

Description: Device to be installed between the compressor and the air cooled condenser in a small refrigeration unit. It consists of a dryer-filter heat exchanger, a venturi-ejector, and connecting piping.

Inventor: Clyde G Phillips
State : DEContact:
Clyde G Phillips
Rural Route #2
Box #148-G, Angola Beach
Lewes DE 19971
302-945-9093

Status: Complete Status Date: 02/22/80 OERI No.: 001188

Patent Status : Patent # - 3783629
Development Stage : Laboratory Test
Technical Category: MiscellaneousRecv by NBS : 07/02/76
Recom. by NBS : 07/31/79
Award Date : 12/07/79 Award Amount: \$ 6,910 Grant No: FG01-80IR10318
Contract Period: 12/07/79 - 12/01/80

Summary: The grantee installed his device in one large- capacity, and one small-capacity commercially available air conditioners and shipped them to an independent testing laboratory where the change in performance was documented. No energy savings were apparent.

DOE No: 0116 DOE Coord: G. K. ELLIS

Title: Model 5000 ASEPAK System

Description: The inventions are for new methods for fabricating and aseptically filling sterile plastic bags with certain classes of food materials that have been previously sterilized by ultra-high temperature processes for very short periods of time.

Inventor: Roy J Weikert
State : OHContact:
Roy J Weikert

Status: No DOE Support Status Date: 10/04/80 OERI No.: 002946

Patent Status : Patent # - 3813845 and others
Development Stage : Prototype Development
Technical Category: Industrial ProcessesRecv by NBS : 11/04/77
Recom. by NBS : 08/30/79

Summary: Unable to identify suitable scope of work which was both agreeable to the inventor and supportable by DOE.

DOE No: 0117 DOE Coord: J. AELLEN

Title: "Solarspan" Prism Trap

Description: An all-plastic, black liquid, solar collector with provisions for freeze and overheat protection. Plastic can be molded to give good structural properties with thin sections.

Inventor: John Mattson
State : MAContact:
George E Mattson
361 Moraine Street
Brockton MA 02401
617-585-3598

Status: Complete Status Date: 09/30/80 OERI No.: 002189

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Direct SolarRecv by NBS : 03/28/77
Recom. by NBS : 09/20/79
Award Date : 09/30/80 Award Amount: \$ 98,700 Grant No: FG01-80CS15024
Contract Period: 09/30/80 - 10/30/81

Summary: A grant of \$98,700 was awarded to design, test and construct, low-cost plastic solar water heating panels. The project was successful. Evaluation by the Oak Ridge National Laboratory comments that this invention "will save the solar program by showing all concerned that low costs can be achieved." Product is available for wholesale distribution.

DOE No: 0118 DOE Coord: J. AELLEN

Title: Energy Adaptive Control of Precision Grinding

Description: An otherwise conventional, universal, external cylindrical grinder retrofitted with a computer control to save energy in removing metal.

Inventor: Roderick L Smith
State : ILContact:
Roderick L Smith
Energy Adaptive Grinding, Inc.

2012 Greenfield Lane
Rockford IL 61107
815-399-5614

Status: Complete Status Date: 07/10/85 OERI No.: 003876

Patent Status : Patent # - 3653855
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 04/24/78
Recom. by NBS : 09/27/79
Award Date : 09/15/81 Award Amount: \$ 99,328 Grant No: FG01-81CS15075
Contract Period: 09/15/81 - 09/15/82

Summary: A grant of \$99,328 was awarded to perform a complete engineering design and test of the invention prototype equipment. The technology has been licensed to the Caterpillar Tractor Company.

DOE No: 0127

DOE Coord: D. G. MELLO

Title: Process and Apparatus to Produce Crude Oil from Tar Sands

Description: Two-vessel, fluidized bed system connected by heat pipes to transfer heat between the upper pyrolizer vessel and the lower combustor vessel in which char residue is burned. Clean sand comes out in the tailings and a usable grade of synthetic crude oil out the overhead.

Inventor: J D Seader
State : UTContact:
J D Seader
Merrill Engineering Building
University of Utah
Sale Lake City UT 84112
801-581-6348

Status: Complete

Status Date: 09/16/84

OERI No.: 005003

Patent Status : Patent # -
Development Stage : Laboratory Test
Technical Category: Fossil Fuels

Recv by NBS : 03/26/79

Recom. by NBS : 12/31/79

Award Date : 09/16/82 Award Amount: \$ 49,949 Grant No: FG01-82CE15136

Contract Period: 09/16/82 - 09/30/83

Summary: A 12-month grant of \$49,949 was awarded to the University of Utah to design, construct, and operate a device for the purpose of producing crude oil from tar sands. Goals to prove the design, optimize the variables (including the product mix), and to prove the concept have been achieved.

DOE No: 0128

DOE Coord: D. G. MELLO

Title: Continuous Distillation Apparatus and Method

Description: New design for distilling column where the rectifying and stripping sections are side by side, and heat pipes transfer heat from the rectifying to the stripping section.

Inventor: J D Seader
State : UTContact:
J D Seader
Merrill Engineering Building
University of Utah
Salt Lake City UT 84112
801-581-6348

Status: Complete

Status Date: 04/02/85

OERI No.: 005004

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv by NBS : 03/26/79

Recom. by NBS : 12/31/79

Award Date : 09/16/82 Award Amount: \$ 49,652 Grant No: FG01-82CE15138

Contract Period: 09/16/82 - 09/30/83

Summary: A 12-month grant of \$49,652 was awarded to the University of Utah to design, construct, and operate a model distillation apparatus to simulate the rectifying and stripping sections of a proposed continuous distillation apparatus.

DOE No: 0131

DOE Coord: J. AELLEN

Title: Valve Deactuator for Internal Combustion Engines

Description: A retrofit device that can provide variable displacement operation on existing gasoline engines by one cylinder at a time deactuating.

Inventor: Edgar R Jordon
State : MIContact:
N. John Beck
Fuel Injection Development Co
5141 Santa Fe Street
San Diego CA 92109
619-270-6760

Status: Complete

Status Date: 09/25/80

OERI No.: 005110

Patent Status : Patent # - 4114588
Development Stage : Prototype Development
Technical Category: Combustion Engines & ComponentsRecv by NBS : 05/01/79
Recom. by NBS : 02/29/80
Award Date : 09/25/80 Award Amount: \$ 65,972 Grant No: FG01-80CS15023
Contract Period: 09/25/80 - 06/25/82

Summary: A grant of \$65,972 was awarded to develop and test a valve deactivator for internal combustion engines. The invention is available for sale or lease.

DOE No: 0132

DOE Coord: D. G. MELLO

Title: Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material

Description: A system for mechanically pelletizing ferrous and non-ferrous metals and some plastics, grading according to size, and then separating according to density by conventional gravity techniques.

Inventor: Michael Knezevich
State : INContact:
Michael Knezevich

Status: No DOE Support

Status Date: / /

OERI No.: 003045

Patent Status : Patent # - 4119453
Development Stage : Limited Production/Marketing
Technical Category: Industrial ProcessesRecv by NBS : 11/22/77
Recom. by NBS : 03/25/80

Summary: Other financial commitments prevent inventor from proceeding.

DOE No: 0133 DOE Coord: D. G. MELLO

Title: AUTOTHERM Car Comfort System

Description: An auxiliary coolant circulator for an automobile which will provide heat to the vehicle operator for a period of time without requiring the engine to idle.

Inventor: F J Perhats
State : ILContact:
James V Enright
Autotherm, Inc.
314 East Main Street
P.O. Box #333
Barrington IL 60010
312-381-6366

Status: Complete Status Date: 06/19/83 OERI No.: 004641

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Transportation Systems, Vehicles & ComponentsRecv by NBS : 07/27/78
Recom. by NBS : 03/26/80
Award Date : 06/19/81 Award Amount: \$ 71,034 Grant No: FG01-81CS15050
Contract Period: 06/19/81 - 06/19/83

Summary: A 24-month grant of \$71,034 was awarded to perform the necessary research and development to ready the invention for the marketplace. A component, the pump, is on the market with sales of \$36,000. An additional \$300,000 in sales, supporting a 5-man operation, has come from Europe and Canada. Product is available for wholesale distribution. To date the company has sold 10K units at \$160 each, altogether saving 0.625 trillion Btu/Yr. They expect to sell 5-10K units/Yr. for the next 5 years.

DOE No: 0134 DOE Coord: D. G. MELLO

Title: Expanded Polystyrene Bead Insulation System

Description: A means for retro-insulating housing walls, utilizing expanded polystyrene bead insulation coated with a flame-retardant adhesive and applied with a unique blower-mixer nozzle.

Inventor: John C Rupert
State : MNContact:
John C Rupert
1511 Grantham Street
Saint Paul MN 55108
612-645-0414

Status: Complete Status Date: 01/02/84 OERI No.: 005239

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 05/30/79
Recom. by NBS : 03/31/80
Award Date : 09/26/80 Award Amount: \$ 80,844 Grant No: FG01-80CS15027
Contract Period: 09/26/80 - 12/31/82

Summary: A grant of \$80,844 was awarded to select an adhesive/flame retardant, test it at an independent laboratory, develop the blower system, develop a business plan, and demonstrate the technology. A final report is due. A first commercial sale grossed \$14,000, with total residential sales grossing \$100,000. Firm employs three individuals.

DOE No: 0137

DOE Coord: J. AELLEN

Title: A Portable Pollution Free Automobile Incinerator

Description: Portable automobile incinerator

Inventor: H Roy Weber
State : HIContact:
H Roy Weber
Box #336
Kailua HI 96734
808-262-6548

Status: Complete

Status Date: 06/30/86

OERI No.: 005130

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Industrial Processes

Recv by NBS : 05/17/79

Recom. by NBS : 05/08/80

Award Date : 06/20/81 Award Amount: \$ 99,408 Grant No: FG01-81CS15044

Contract Period: 06/20/81 - 09/30/82

Summary: A 15-month grant of \$99,408 was awarded to fabricate, construct and test, an incinerator to prove the invention is a viable method of reducing scrap cars into satisfactory condition for recycling into the iron and steel industry. The company filed bankruptcy before the grant was completed.

DOE No: 0138

DOE Coord: J. AELLEN

Title: Phantom Tube

Description: Phantom tube is a non light emitting, low energy device to be paired with a fluorescent tube in rapid or instant start fixtures. Device completes the electrical circuit to allow fixtures to operate on fewer lamps than original design specified, thus reducing electric power consumption. Product lifetime is virtually unlimited.

Inventor: Gerald R Seeman
State : CAContact:
Bernard Joseph Margowsky

Status: No DOE Support

Status Date: 12/31/81

OERI No.: 001994

Patent Status : Patent # - 3956665
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & Components

Recv by NBS : 03/28/77

Recom. by NBS : 05/28/80

Summary: No appropriate DOE support can be identified. Product supports 5 employees and is on the market. The relatively slow sales of 1.5 million units/year appear adequate to support any needed market research the company might wish to initiate.

DOE No: 0141 DOE Coord: D. G. MELLO

Title: New Hydrostatic Transmission

Description: A continuously variable hydraulic positive displacement transmission with lockup, overdrive, and regenerative braking for automotive and other vehicular uses.

Inventor: Samuel Shiber
State : ILContact:
Samuel Shiber
P. O. Box #371
Mundelein IL 60060

Status: Complete Status Date: 07/09/81 OERI No.: 003673

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & ComponentsRecv by NBS : 03/06/78
Recom. by NBS : 06/23/80
Award Date : 07/09/81 Award Amount: \$ 95,000 Grant No: FG01-81CS15064
Contract Period: 07/09/81 - 07/09/83

Summary: A grant of \$95,000 was awarded to design, build and test a Volkswagen Sirocco with a prototype hydrostatic transmission installed. Project was funded with 90 percent inventor-originated funds and 10 percent DOE funds. Inventor's share was 50 percent domestic and 50 percent foreign funded. Transmission is now available for licensing.

DOE No: 0142 DOE Coord: J. AELLEN

Title: Process for Heatless Production of Hollow Items

Description: A metal casting method for hollow parts

Inventor: Anatol Michelson
State : FLContact:
Anatol Michelson
3235 Pine Valley Drive
Sarasota FL 33579
815-388-1252

Status: Complete Status Date: 07/01/81 OERI No.: 005822

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 09/24/79
Recom. by NBS : 06/26/80
Award Date : 06/30/81 Award Amount: \$108,920 Grant No: FG01-81CS15055
Contract Period: 06/30/81 - 12/31/82

Summary: An 18-month grant of \$108,920 was awarded to construct and test a working model to demonstrate the heatless production of hollow casting. The work has been completed. The invention has potential for greatly increasing productivity of the casting process. Inventor interested in licensing.

DOE No: 0143 DOE Coord: J. AELLEN

Title: Oil Well Pump Jack

Description: A new design for a pump that would replace the conventional beam pumps in pumping oil wells. It utilizes longer strokes than generally used by the beam pumps and has slower rates of acceleration/deceleration, reducing the power required to overcome the inertia of the sucker rods and other moving parts.

Inventor: Robert A Clay
State : CA

Contact:
Amar Amancharla
Alphatech Corporation
Houston TX 77052
713-530-9060

Status: Award Status Date: 07/31/84 OERI No.: 005888

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv by NBS : 10/19/79
Recom. by NBS : 06/27/80
Award Date : / / Award Amount: \$ 52,500 Grant No: FG01-84CE15188
Contract Period: / / - / /

Summary: A phase one grant of \$52,500 was made to perform engineering designs of the pump jack. Phase two will be funded upon availability of funds.

DOE No: 0144 DOE Coord: P. M. HAYES

Title: SpaCirc Space Circulation Fan

Description: The invention is a different type of ceiling fan designed for improved circulation and mixing of air throughout an air conditioned room. The increased air velocity allows the perception of comfort at higher temperatures and humidities.

Inventor: Robert C Saunders, Junior
State : MD

Contact:
Robert C Saunders, Junior

Status: No DOE Support Status Date: / / OERI No.: 005852

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components

Recv by NBS : 10/09/79
Recom. by NBS : 07/23/80

Summary: Unable to reach agreement on work to be done. Inventor's interest has waned, due to several competitors now in the field and expected high costs of production of the Spacirc. No further action is anticipated.

DOE No: 0145 DOE Coord: J. AELLEN

Title: Solar Conversion by Concentration Cells with Hydrides

Description: The invention is a hydrogen concentration cell which converts solar energy to electricity by using heat to generate the gas pressure to drive the cell. (It is an electrochemical heat engine with sunlight furnishing the heat.)

Inventor: Robert E Salomon
State : PA

Contact:
Robert E Salomon
Chemistry Department
Temple University
Philadelphia PA 19122
215-787-7125

Status: Complete Status Date: 07/01/81 OERI No.: 006213

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Direct Solar

Recv by NBS : 12/26/79
Recom. by NBS : 07/29/80
Award Date : 07/01/81 Award Amount: \$ 67,868 Grant No: FG01-81CS15043
Contract Period: 07/01/81 - 09/30/83

Summary: A 17-month grant of \$67,868 was awarded to build and test a laboratory model of the inventor's system, to determine efficiency and feasibility. Inventor requested an extension through 8/83 to allow summer school student assistance to continue. Inventor interested in industry financial support, and eventual licensing. This project has been completed.

DOE No: 0146 DOE Coord: J. AELLEN

Title: Line Integral Method of Magneto-Electric Exploration

Description: A method of exploring for gas and oil deposits by plotting the intensity and polarities of local perturbations in the earth's magnetic field. These perturbations are caused by naturally occurring electrotelluric (ET) currents associated with the oil and gas.

Inventor: Sylvain J Pirson
State : TX

Contact:
Ronald M Hertzfeld
5310 Harvest Hill
Suite #285
Dallas TX 75230
214-386-9311

Status: Complete Status Date: 08/15/83 OERI No.: 004794

Patent Status : Patent # - 3943436
Development Stage : Limited Production/Marketing
Technical Category: Fossil Fuels

Recv by NBS : 01/25/79
Recom. by NBS : 07/30/80
Award Date : 08/13/82 Award Amount: \$ 74,689 Grant No: FG01-82CE15127
Contract Period: 08/13/82 - 08/15/83

Summary: A grant of \$74,689 was awarded to make a priori predictions on at least 10 locations where wildcat wells are planned. Results show not only accuracy of prediction of dry/wet holes, but also predicted depth of drilling required. The inventor has sold about ten projects based on these results. Project has been completed.

DOE No: 0147 DOE Coord: J. AELLEN

Title: Railroad Switch Heater

Description: The invention is an electric resistance heater for attachment to railroad switches. The heater can be activated to prevent ice and snow from clogging the area where the railroad switch is closed or opened.

Inventor: Henry Keep, Junior
State : CTContact:
A. D. Barrett, VP

Status: No DOE Support Status Date: / / OERI No.: 005692

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 09/04/79
Recom. by NBS : 07/31/80

Summary: Inventor advised that DOE would decline funding because the proposed testing of a commercially available device was outside this program's area of interest. Quantities of the device have been sold to Amtrak.

DOE No: 0148 DOE Coord: J. AELLEN

Title: Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes

Description: The invention is a process for steel mills to use in order to recover the energy value of the oil and mill scale from the mill scale produced in rolling mill operations.

Inventor: Leonard A Duval
State : OHContact:
Leonard A Duval
Colerapa Industries, Inc
Box #172
Aurora OH 44202
216-562-9822

Status: Complete Status Date: 03/10/82 OERI No.: 005418

Patent Status : Patent # - 3844943
Development Stage : Working Model
Technical Category: Industrial Processes

Recv by NBS : 08/22/79
Recom. by NBS : 08/15/80
Award Date : 03/10/82 Award Amount: \$ 99,000 Grant No: FG01-82CE15084
Contract Period: 03/10/82 - 09/09/82

Summary: In FY 82, a 6-month grant of \$99,000 was awarded to test the Duval millscale deoiling process, using Duval's pilot plant with a design capacity of 2 tons/hr of oily millscale. In FY 84 the inventor reported to NBS that he had achieved commercial success with the first plant being built in Aurora, Ohio. Others were planned for Chicago, Detroit, Pittsburgh and Hamilton, Ontario. An export license was signed with SPEICHIM in Paris that covers Europe, China and the USSR. Negotiations were underway with C. Itoh of Tokyo. Each plant will require \$5 million capital and 35 employees.

DOE No: 0149 DOE Coord: P. M. HAYES
Title: SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)

Description: A system to retrofit residential and other steam heating systems to allow zone heating.

Inventor: Ogden H Hammond Contact:
State : MA Ogden H Hammond

 Monument Beach MA 02553
 617-757-8400

Status: Complete Status Date: 07/28/82 OERI No.: 005610

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components

Recv by NBS : 08/06/79
Recom. by NBS : 08/18/80
Award Date : 01/26/81 Award Amount: \$ 91,962 Grant No: FG01-81CS15038
Contract Period: 01/26/81 - 07/28/82

Summary: A grant of \$91,962 was awarded to design, build and test prototype installations in several residences in the Boston area where steam heated homes are numerous and winters severe. Grant is complete, the company made some sales, and is licensing the control system, which uses house wiring to convey signals.

DOE No: 0150 DOE Coord: D. G. MELLO
Title: The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.

Description: The invention involves the use of solid waste material from a lubricating oil and/or vegetable oil refining operation being used as a raw material for a Portland cement plant.

Inventor: Edward W Midlam Contact:
State : LA Edward W Midlam

 2300 21st Street
 Lake Charles LA 70601
 318-436-6656

Status: Complete Status Date: 08/06/81 OERI No.: 007141

Patent Status : Disclosure Document Program
Development Stage : Production Engineering
Technical Category: Industrial Processes

Recv by NBS : 06/16/80
Recom. by NBS : 09/30/80
Award Date : 08/06/81 Award Amount: \$ 64,200 Grant No: FG01-81CS15073
Contract Period: 08/06/81 - 06/30/83

Summary: A grant of \$64,200 was awarded to investigate one or more specific marketing opportunities. Unfavorable market conditions prevented inventor from pursuing the project further.

DOE No: 0155 DOE Coord: J. AELLEN

Title: Slip Mining

Description: A method of surface mining coal that involves skidding a series of overburden blocks off the coal. The blocks are buoyantly supported, stabilized and displaced by a dense mud slurry. Slabs of coal uncovered by block movement are floated to the surface of the dense mud and recovered from the surface of the mud filled pit.

Inventor: James M Cleary
State : MAContact:
James M Cleary
92 McCallum Drive
Box #541
Falmouth MA 02541
617-548-6686

Status: Award Status Date: 07/10/86 OERI No.: 007292

Patent Status : Patent # - 4059309 and others
Development Stage : Concept Development
Technical Category: Fossil FuelsRecv by NBS : 07/23/80
Recom. by NBS : 10/31/80
Award Date : 12/10/84 Award Amount: \$109,385 Grant No: FG01-85CE15195
Contract Period: 12/10/84 - / /

Summary: A grant of \$109,385 was awarded in three phases to build and field test a prototype slurry trenching machine.

DOE No: 0156 DOE Coord: J. AELLEN

Title: Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.

Description: A new application of electrical conduction for the continuous heat treatment of rolled steel strip that uses less energy than conventional methods.

Inventor: James J Dolan
State : FLContact:
James J Dolan
Twenty-Two Laurel Oak
Amelia Island FL 32034
904-261-7571

Status: Complete Status Date: 07/23/81 OERI No.: 005375

Patent Status : Patent # - 4154432 and others
Development Stage : Limited Production/Marketing
Technical Category: Industrial ProcessesRecv by NBS : 07/03/79
Recom. by NBS : 10/31/80
Award Date : 07/23/81 Award Amount: \$ 99,485 Grant No: FG01-81CS15058
Contract Period: 07/23/81 - 07/23/82

Summary: A 12-month grant of \$99,485 was awarded to design a plant for Southwest Pipe Company, prepare a design manual, and to collect data on energy savings. Two installations are now running: one in Texas and one in Alabama. Negotiations underway for three more in Indian Steel Mills.

DOE No: 0163 DOE Coord: P. M. HAYES

Title: Thermotropic Plastic Films

Description: A thermotropic plastic film which can be formulated to become opaque above a particular temperature. When sealed between two layers of glass it could serve as a window shade for greenhouses or other solar heated structures.

Inventor: Dennis D Howard
State : PAContact:
Dennis D Howard
200 West Grandview Boulevard
Erie PA 16512
814-868-3611

Status: Complete Status Date: 07/13/82 OERI No.: 006831

Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 05/15/80
Recom. by NBS : 12/04/80
Award Date : 07/09/81 Award Amount: \$ 99,093 Grant No: FG01-81CS15045
Contract Period: 07/09/81 - 07/13/82

Summary: A grant of \$99,093 was given to perform research and development leading to a practical design with special attention given to edge sealing and general weather proofing of the laminated panes. The grant is complete; double glass enclosures were found to be too costly. Inventor is using his own funds to develop an embossed plastic seal via small compartments of fluid separated by heat-sealed pattern. Company seeks joint venture and/or licensing.

DOE No: 0164 DOE Coord: J. AELLEN

Title: Elastomer Energy Recovery Elements and Vehicle Component Applications

Description: A regenerative braking device, for a small urban automobile, that stores energy during downhill operation for additional acceleration and power when needed with a minimum of fuel consumption. Energy is mechanically stored by an elastomeric storage device.

Inventor: John D Gill
State : MDContact:
John D Gill
Elastomer Energy Recovery Inc
419 Fourth Street
Annapolis MD 21403
301-263-5735

Status: Complete Status Date: 04/15/82 OERI No.: 006433

Patent Status : Disclosure Document Program
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & ComponentsRecv by NBS : 12/12/79
Recom. by NBS : 12/04/80
Award Date : 07/09/81 Award Amount: \$ 89,507 Grant No: FG01-81CS15054
Contract Period: 07/09/81 - 04/15/82

Summary: A grant of \$89,507 was awarded to design, build, and test a scale model to determine optimum design after which a full scale model will be built and tested. The grant is complete. Inventor now seeks \$100,000 private sector support to demonstrate proof of concept of a two-person, enclosed, three wheel moped using a small gasoline motor. Energy is stored in elastomer via pedals on downhill runs and upon deceleration.

DOE No: 0167 DOE Coord: J. AELLEN

Title: Vaned Pipe for Pipeline Transport of Solids

Description: A slurry pipeline with helical vanes to maintain a rotating motion in the slurry to hold the solids in suspension in the laminar flow range, thus increasing the range of flow rates at which solids can be transported without settling.

Inventor: Edward B Connors
State : ID

Contact:
Edward B Connors
1337 Holman
Pocatello ID 83201
208-237-6661

Status: Complete Status Date: 10/01/83 OERI No.: 006483

Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv by NBS : 02/25/80
Recom. by NBS : 01/19/81
Award Date : 08/11/82 Award Amount: \$111,577 Grant No: FG01-82CE15083
Contract Period: 08/11/82 - 08/30/84

Summary: A grant of \$111,577 was awarded to design, build and test several configurations of the basic idea under various flow conditions with various slurry mixtures. The project was completed on October 1st, 1983.

DOE No: 0168 DOE Coord: G. K. ELLIS

Title: The Hot Water Saver

Description: Modifications to a residential hot water system so that hot water trapped in the pipes between the water-heater and the point of use is returned to the water heater thus reducing heat loss and water consumption.

Inventor: Spencer Kim Haws
State : WA

Contact:
Spencer Kim Haws
P. O. Box #315
Mesa WA 99343
509-265-4327

Status: Complete Status Date: 10/09/84 OERI No.: 006783

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & Components

Recv by NBS : 04/07/80
Recom. by NBS : 01/28/81
Award Date : 09/30/82 Award Amount: \$ 90,000 Grant No: FG01-82CE15134
Contract Period: 09/30/82 - 09/29/83

Summary: A grant of \$90,000 was awarded to laboratory and field test the unit, and to document savings and find optimum application. The test results showed 17% of the energy used for water heating could be saved by using this invention. Mr. Haws sold his invention to Metlund Enterprises of Stockton, CA in exchange for royalties. Methlund Enterprises had sold about 400 units as of April, 1986.

DOE No: 0169 DOE Coord: P. M. HAYES

Title: MIRAFOUNT

Description: A cattle waterer which is functional in the coldest climate without the use of an immersed electric or gas heater. It consists of a heavily insulated tank with a floating, insulated cover and a float valve assembly.

Inventor: Mervin W Martin
State : MO

Contact:
Carter Thompson

Status: No DOE Support Status Date: 03/15/85 OERI No.: 006239

Patent Status : Patent # - 3745977
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NBS : 12/27/79
Recom. by NBS : 01/30/81

Summary: The inventor wanted support for a marketing study, which it is not DOE policy to provide.

DOE No: 0170 DOE Coord: J. AELLEN

Title: Fog System - Low Energy Freeze Protection for Agriculture

Description: A low energy-consuming agricultural freeze protection system using a non-polluting man-made water fog to cover crops and prevent heat loss and freeze damage. The fog system is designed to use significantly less energy than oil-burning agricultural heaters. The inventor has also developed instruments to increase quality of the clouds.

Inventor: Thomas R Mee
State : CA

Contact:
Thomas R Mee

Status: No DOE Support Status Date: 07/09/86 OERI No.: 005622

Patent Status : Patent # - 4039144 and others
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NBS : 08/22/79
Recom. by NBS : 01/30/81

Summary: Inventor reports net income of \$400,000 in 1984 with gross sales of \$1.9 million. First three months of 1985 have yielded \$700,000 gross. Sales have doubled annually over the last three years. Firm now employs thirty individuals.

DOE No: 0171

DOE Coord: P. M. HAYES

Title: A Method of Preserving Fruits and Vegetables without Refrigeration

Description: A method for preserving fruits and vegetables without refrigeration by using controlled atmosphere packages to keep oxygen levels low and the water vapor and carbon dioxide levels at desired optimums.

Inventor: Karakian Bedrosian
State : NJ

Contact:
Karakian Bedrosian
Sherwood Court
Alpine NJ 07620
201-767-3260

Status: Complete

Status Date: 10/31/82

OERI No.: 006950

Patent Status : Patent # - 4079152
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NBS : 04/28/80
Recom. by NBS : 02/23/81
Award Date : 08/25/81 Award Amount: \$ 97,300 Grant No: FG01-81CS15061
Contract Period: 08/25/81 - 10/31/82

Summary: A grant of \$97,300 was awarded to conduct laboratory studies and field trials of various package configurations suitable for shipment of tomatoes by truck from point of growth to point of consumption. Demonstrations were successful. Marketed under the trade name of "TomAhtoes", 751,000 25-pound boxes were shipped in 1987, with \$35 million in retail sales. With its potential for use with other fresh fruits and vegetables, this innovative packaging can provide significant national energy savings.

DOE No: 0172

DOE Coord: D. G. MELLO

Title: GEM Electrostatic Filtration System

Description: An electrostatic filter for removing suspended particles from fluids such as hydraulic fluids, liquid fuels, engine lubricants and waste oil.

Inventor: Edward A Griswold
State : CA

Contact:
Edward A Griswold
Special Equipment Company
26022 Cape Drive, #G
Laguna Niguel CA 92677
714-581-6730

Status: Complete

Status Date: 09/29/82

OERI No.: 004255

Patent Status : Patent # - 3891528 and others
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 08/03/78
Recom. by NBS : 02/26/81
Award Date : 10/01/82 Award Amount: \$ 88,285 Grant No: FG01-83CE15139
Contract Period: 10/01/82 - 06/30/83

Summary: An 8-month grant of \$88,285 was awarded for demonstration of the GEM filtration system. The unit was designed and installed on several types of diesel engines under controlled conditions. Filtered material was analyzed. ERIP assistance is complete.

DOE No: 0173 DOE Coord: J. AELLEN

Title: Thermal Ice Cap

Description: An insulating blanket to reduce refrigeration loads in ice skating rinks during periods of non-use, combined with an advanced method of applying and removing the 17,000 sq. ft of thermal insulation.

Inventor: Bill Burley
State : PA

Contact:
Bill Burley
Peterson Drive
Johnstown PA 15905
814-288-1750

Status: Complete Status Date: 08/10/81 OERI No.: 006277

Patent Status : Not Applied For
Development Stage : Working Model
Technical Category: Buildings, Structures & Components

Recv by NBS : 01/07/80
Recom. by NBS : 02/26/81
Award Date : 08/19/81 Award Amount: \$ 79,726 Grant No: FG01-81CS15066
Contract Period: 08/19/81 - 05/15/82

Summary: A grant of \$79,726 was awarded to build and test a prototype model of the thermal ice cap, and was successfully completed. Energy savings were experimentally determined to be almost exactly as predicted by NBS analysis. This experimental device is still in use on the Mall in Washington, DC. Inventor seeks opportunities to direct sales.

DOE No: 0174 DOE Coord: J. AELLEN

Title: Skate on Plastic Ice Skating System

Description: A non-refrigerated plastic skating surface to replace energy intensive ice skating surfaces.

Inventor: E O Nathaniel
State : MO

Contact:
Gene Plattner

Status: No DOE Support Status Date: 09/28/81 OERI No.: 006241

Patent Status : Patent # - 4030729
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & Components

Recv by NBS : 12/31/79
Recom. by NBS : 03/05/81

Summary: Invention coordinator and inventor agreed to scope of work for a grant. Prior funding by the Small Business Administration has led to sales of some units. Units were not a commercial success because of perceived "extra skating effort".

DOE No: 0175 DOE Coord: J. AELLEN

Title: A Low-Energy Carpet Backing System

Description: A low energy carpet backing system which uses a hot- melt thermoplastic coating. The hot-melt coating replaces the present latex adhesive coating which locks the tufts or stitches into the primary backing fabric.

Inventor: Den M Acres
State : GA

Contact:
W W Seward
c/o DASH, Inc.
1303 Dug-Gap Road
Dalton GA 30720
404-278-2556

Status: Complete Status Date: 08/01/81 OERI No.: 006931

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Industrial Processes

Recv by NBS : 05/05/80
Recom. by NBS : 03/26/81
Award Date : 08/01/81 Award Amount: \$ 79,173 Grant No: FG01-81CS15070
Contract Period: 08/01/81 - 01/31/83

Summary: A grant of \$79,173 was awarded and completed to refit a carpet backing machine with automatic control elements and test on a variety of carpet products. Grantee intends to market the product directly to carpet mills, and predicts an estimated 86% energy savings in manufacture of coated carpeting. Commercial viability of the technology was demonstrated. Inventor is in commercial production. He seeks venture capital assistance.

DOE No: 0176 DOE Coord: J. AELLEN

Title: Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces

Description: An automatically fired portable furnace for burning coal and agricultural waste (e.g. corn, wood waste, poultry manure) for use in drying grain and heating homes and buildings.

Inventor: John D. Finnegan
State : MN

Contact:
Dale Flickinger

Status: No DOE Support Status Date: 06/30/86 OERI No.: 007428

Patent Status : Not Patentable
Development Stage : Working Model
Technical Category: Buildings, Structures & Components

Recv by NBS : 08/18/80
Recom. by NBS : 04/03/81

Summary: DOE found no basis for support.

DOE No: 0177 DOE Coord: D. G. MELLO

Title: The Solar I Option

Description: A solar heating system using commercially available collectors and components and a concrete floor slab as a heat storage device and heat exchanger.

Inventor: Robert John Starr
State : VTContact:
Robert John Starr
R.F.D.
Sutton VT 05867
802-626-8045

Status: Complete Status Date: 08/15/84 OERI No.: 006040

Patent Status : Not Applied For
Development Stage : Limited Production/Marketing
Technical Category: Direct SolarRecv by NBS : 12/03/79
Recom. by NBS : 05/07/81
Award Date : 09/24/82 Award Amount: \$ 52,960 Grant No: FG01-82CE15140
Contract Period: 09/24/82 - 06/30/84

Summary: A grant of \$52,960 was awarded to test the effectiveness of a previously installed system. The University of Massachusetts furnished instrumentation, data analysis and computer programs for future design analysis. Energy savings were essentially as predicted. Some sales have been made, but generally "solar" market is slow. This project has been completed.

DOE No: 0178 DOE Coord: D. G. MELLO

Title: Process and Apparatus for Producing Cellulated Vitreous Refractory Material

Description: A process and apparatus to produce cellular vitreous refractory material in prescribed shapes lighter than conventional brick or tile and more impermeable. The material will have high structural strength and will be highly insulative and light weight.

Inventor: John W North
State : GAContact:
John W North
J W North Company
c/o Silica-North, Ltd.
P O Box #838
Tuscombia AL 35674
205-381-3582

Status: Complete Status Date: 07/23/84 OERI No.: 007726

Patent Status : Patent # - 4212635 and others
Development Stage : Engineering Design
Technical Category: Industrial ProcessesRecv by NBS : 10/30/80
Recom. by NBS : 04/15/81
Award Date : 09/08/82 Award Amount: \$ 94,688 Grant No: FG01-82CE15117
Contract Period: 09/08/82 - 09/08/83

Summary: A 12-month grant of \$94,688 was awarded to design, build and operate a pilot plant for manufacture of cell glass building material. There appears to be no market for this product.

DOE No: 0179

DOE Coord: G. K. ELLIS

Title: Development and Commercialization of Low Cost, Non- Metallic, Solar Systems

Description: A solar hot water heating system consisting of a non-metallic flat plate solar collector made from ethylene-propylene-diene monomer and non-pressurized thermal storage.

Inventor: Charles E Edwards
State : MA

Contact:
Charles E Edwards
Six Reeves Road
Bedford MA 01730
617-458-6463

Status: Complete

Status Date: 01/03/84

OERI No.: 007158

Patent Status : Patent Applied For
Development Stage : Prototype Development
Technical Category: Direct Solar

Recv by NBS : 06/19/80

Recom. by NBS : 04/17/81

Award Date : 08/17/81 Award Amount: \$ 99,999 Grant No: FG01-81CS15071

Contract Period: 08/17/81 - 01/03/84

Summary: A grant of \$99,999 was awarded to Solex Corporation to finalize design and manufacturing methods for a low cost solar collector. Prototypes were manufactured and tested for efficiency and weatherability. The inventor got \$500,000 over a 5- year contract in Saudi Arabia. Governments of Saudi Arabia and Jordan have indicated interest in licensing his technology. He has received numerous inquiries about his technology from all over the world.

DOE No: 0180

DOE Coord: J. AELLEN

Title: Adjustable Solar Concentrator (ASC)

Description: A Concentrating Solar Collector using movements and loads on edges of elastic sheets to form cylindrical parabolic reflector.

Inventor: Richard E Dame
State : MD

Contact:
Richard E Dame
10701 Harper Avenue
Silver Spring MD 20901
301-681-6903

Status: Complete

Status Date: 08/15/84

OERI No.: 002116

Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Direct Solar

Recv by NBS : 04/27/77

Recom. by NBS : 04/20/81

Award Date : 08/26/81 Award Amount: \$ 97,066 Grant No: FG01-81CS15172

Contract Period: 08/26/81 - 12/28/83

Summary: A grant of \$97,066 was awarded to develop a fabrication technique for a low-cost, high- performance adjustable concentrating solar collector. Effort successful, but market for medium-temperature collectors is very poor. The project has been completed.

DOE No: 0181 DOE Coord: J. AELLEN

Title: The Karlson Ozone Sterilizer

Description: An ozone sterilizer for medical use in both field and hospital. It is low-powered and lightweight. It sterilizes in less than ten minutes, requires no steam and can automatically package sterilized instruments for storage up to several months.

Inventor: Eskil L Karlson
State : PAContact:
Eskil L Karlson
4634 State Street
Erie PA 16509
814-868-1121

Status: Complete Status Date: 04/27/82 OERI No.: 008061

Patent Status : Patent # - 3719017 and others
Development Stage : Prototype Development
Technical Category: Miscellaneous

Recv by NBS : 02/09/81
Recom. by NBS : 05/29/81
Award Date : 05/01/82 Award Amount: \$133,304 Grant No: FG01-82CE15082
Contract Period: 05/01/82 - 05/01/84

Summary: A 24-month grant of \$133,304 was awarded to design, develop, and test the Karlson ozone sterilizer system. Inventor seeks venture capital and/or licensing for third world and other markets. This project has been completed.

DOE No: 0182 DOE Coord: J. AELLEN

Title: Improved Seal for Geothermal Drill Bit

Description: A new type of sealing arrangement for the cone bearings of a standard rotary drill bit used for geothermal exploration which prolongs the bearing life for a given load and rotary speed.

Inventor: Robert F Evans
State : CAContact:
Robert F Evans
Box #62
La Mirada CA 90637
213-697-8486

Status: Complete Status Date: 07/09/86 OERI No.: 007089

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Other Natural Sources

Recv by NBS : 06/03/80
Recom. by NBS : 05/29/81
Award Date : 09/01/82 Award Amount: \$ 94,898 Grant No: FG01-82CE15104
Contract Period: 09/01/82 - 08/31/83

Summary: A 12-month grant of \$94,898 was awarded to select by research the best elastomer for use as a bearing seal, and then to test it in the laboratory and in the field. Inventor has made no decision yet on marketing strategy.

DOE No: 0189 DOE Coord: D. G. MELLO

Title: Pump Jack

Description: An oil well pumping system in which a hydraulic pump drives a double-acting hydraulic cylinder in an upward motion. During the down-stroke the pressure below the piston is bled through a flow control valve.

Inventor: Gerald Eastman
State : OKContact:
Gerald Eastman
P. O. Box #145
Ochelata OK 74051
918-535-2393

Status: Complete Status Date: 12/15/83 OERI No.: 007658

Patent Status : Not Applied For
Development Stage : Prototype Test
Technical Category: Miscellaneous

Recv by NBS : 10/10/80
 Recom. by NBS : 08/31/81
 Award Date : 06/15/82 Award Amount: \$ 83,604 Grant No: FG01-82CE15087
 Contract Period: 06/15/82 - 12/15/83

Summary: An grant of \$83,604 was awarded to field test and document the results of testing several of these units at varying depths from 2000 to 7000 feet. Rhino Engineering supervised the tests and documented the results. After several failures and corrections, units operated trouble free for 10 months. Medium-sized company seeks license from inventor. This project is complete.

DOE No: 0190 DOE Coord: G. K. ELLIS

Title: Oxygen-Conducting Material and Oxygen-Sensing Method

Description: An improved oxygen sensing device formed by tape casting an oxygen-conducting material into a dense ceramic body with metal electrodes interdispersed between ceramic layers.

Inventor: W N Lawless
State : OHContact:
W N Lawless
Lake Shore Ceramics, Inc
64 East Walnut Street
Westerville OH 43081
614-891-2243

Status: Complete Status Date: 05/17/83 OERI No.: 007963

Patent Status : Disclosure Document Program
Development Stage : Engineering Design
Technical Category: Miscellaneous

Recv by NBS : 01/07/81
 Recom. by NBS : 09/30/81
 Award Date : 05/18/82 Award Amount: \$ 89,076 Grant No: FG01-82CE15098
 Contract Period: 05/18/82 - 05/17/83

Summary: A grant of \$89,076 was awarded to fabricate and test several ceramic compositions that will be useful for oxygen sensing and possibly be useful as a fuel cell material. First items fabricated under subcontract by Penn State U. are promising. The potential fuel cell application was identified in ERIP's pilot testing of licensing opportunities, the inventor being told that it represented a potential significant advance in state-of-the-art for fuel cells. As indicated, recent tests have confirmed this. This project has been completed.

DOE No: 0193 DOE Coord: J. AELLEN

Title: Engine Heating Device

Description: A truck diesel engine heater (Heat-exchanger/heat-sink) which stores heat from the exhaust for later use in warming a cold engine prior to startup. Crankcase oil or engine coolant is circulated through the heat exchanger and engine for warmup.

Inventor: Nicholas Archer Sanders
State : VT

Contact:
Nicholas Archer Sanders
Weatherready, Incorporated
Eleven Green Ridge Road
Route One, Box #175
Norwich VT 05055
603-643-4351

Status: Award Status Date: 09/30/82 OERI No.: 006928

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 05/07/80
Recom. by NBS : 10/30/81
Award Date : 09/30/82 Award Amount: \$ 91,150 Grant No: FG01-82CE15141
Contract Period: 09/30/82 - 09/30/83

Summary: A 12-month grant of \$91,150 was awarded to construct and test a prototype unit. Results of testing showed large energy savings, but equipment cost needs to be reduced. Marketing proceeding: Honeywell, State of Minnesota and US Army are among interested parties.

DOE No: 0194 DOE Coord: J. AELLEN

Title: Radiant Energy Power Source for Jet Aircraft

Description: Installation of photovoltaic cells in proximity to the liner of a jet engine combustion chamber to generate electrical power for replacing aircraft primary - and/or auxiliary-power units.

Inventor: Oscar Leonard Doellner
State : AZ

Contact:
Oscar Leonard Doellner
1943 South Plumer Avenue
Tucson AZ 85713
602-623-7303

Status: Complete Status Date: 09/28/87 OERI No.: 005673

Patent Status : Patent # - 4090359
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 08/30/79
Recom. by NBS : 11/12/81
Award Date : 09/20/82 Award Amount: \$ 65,000 Grant No: FG01-82CE15144
Contract Period: 09/20/82 - 09/28/87

Summary: A phase one grant of \$10,000 was awarded. Ground tests on the J-85 engine determine sufficient radiant energy is available to power photovoltaic cells. Tests were conducted at Williams AFB. The project has received national and international recognition. A phase two grant package for \$55,000 was used to build and test the hardware to harness radiant energy from a jet engine.

DOE No: 0195 DOE Coord: J. AELLEN

Title: Proportional Current Battery

Description: A proportional current electric storage battery with tapered plate thickness that can maintain high current drain and charging rates with minimal material and weight.

Inventor: Edward L Barrett
State : ILContact:
Mark Pridmore
27 Elder Lane
La Grange IL 60525
312-579-5287

Status: Complete Status Date: 07/09/86 OERI No.: 007280

Patent Status : Patent # - 3846174
Development Stage : Concept Development
Technical Category: MiscellaneousRecv by NBS : 07/14/80
Recom. by NBS : 11/13/81
Award Date : 09/15/82 Award Amount: \$ 87,757 Grant No: FG01-82CE15103
Contract Period: 09/15/82 - 01/15/84

Summary: A grant of \$87,757 was awarded to build and test a working model of the tapered plate battery. The inventor has no plans yet for marketing. Awaiting final report.

DOE No: 0196 DOE Coord: J. AELLEN

Title: Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm

Description: The continuous manufacture, on a farm, of nitrogenous fertilizer by the reaction of nitrogen dioxide with water to produce nitric acid which is neutralized to ammonium nitrate or other nitrogenous compounds that can be applied to a field by way of an irrigation system.

Inventor: John A Eastin
State : NEContact:
John A Eastin
P O Box #30327
Lincoln NE 68509
402-467-2508

Status: Complete Status Date: 08/31/82 OERI No.: 000461

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 12/05/75
Recom. by NBS : 12/23/81
Award Date : 08/31/82 Award Amount: \$ 99,592 Grant No: FG01-82CE15142
Contract Period: 08/31/82 - 08/31/83

Summary: A 12-month grant of \$99,592 was awarded to construct and test a prototype integrated unit, and measure its efficiency. Grantee plans to manufacture and sell units if process is successful. Farm co-ops will produce fertilizer, thus diversifying the process and reducing costs of transportation and storage. This project has been completed.

DOE No: 0201 DOE Coord: D. G. MELLO

Title: Hydraulic, Variable, Engine Valve Actuation System

Description: A modified hydraulic valve lifter which provides a means to vary valve timing and lift to improve fuel economy and reduce emissions. The device is actuated by engine oil pressure and is controlled by manifold vacuum in response to engine demand.

Inventor: Louis A Hausknecht
State : OH

Contact:
Louis A Hausknecht
4504 State Road
Cleveland OH 44109
216-749-1686

Status: Complete Status Date: 12/31/84 OERI No.: 006680

Patent Status : Patent # - 4153016 and others
Development Stage : Working Model
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 03/31/80
Recom. by NBS : 02/26/82
Award Date : 08/27/82 Award Amount: \$ 85,060 Grant No: FG01-82CE15137
Contract Period: 08/27/82 - 08/27/83

Summary: A 12-month grant of \$85,060 was awarded for the design, assembly and testing of a prototype hydraulic variable valve actuating system to be used in automobile engines.

DOE No: 0202 DOE Coord: D. G. MELLO

Title: Wobbling Type Distillation Apparatus

Description: A multiple-effect vacuum distillation system employing sets of wobbling tubes to produce a thin liquid film thereby improving the evaporation efficiency.

Inventor: Yao Tzu Li
State : MA

Contact:
Yao Tzu Li
Huckleberry Hill
Lincoln MA 01773
617-259-9592

Status: Complete Status Date: 09/16/83 OERI No.: 005495

Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Miscellaneous

Recv by NBS : 07/30/79
Recom. by NBS : 03/31/82
Award Date : 09/17/82 Award Amount: \$ 99,880 Grant No: FG01-82CE15129
Contract Period: 09/17/82 - 09/16/83

Summary: A grant of \$99,880 was awarded to design, build and test a prototype distillation device capable of 25 gallons/minute throughput. The inventor is seeking licenses or capital to build and market his machine.

DOE No: 0209

DOE Coord: A. R. BARNES

Title: Reclaiming Process for Resin Treated Fiberglass

Description: A process for reclaiming fiberglass from waste material for use as insulation by separating it from the urea-formaldehyde resin coating with which it is impregnated during manufacture.

Inventor: John W Yount
State : NC

Contact:
John W Yount
P O Box #7
Bullock NC 27507
919-693-4839

Status: Complete

Status Date: 10/30/86

OERI No.: 007861

Patent Status : Patent Applied For
Development Stage : Production Engineering
Technical Category: Buildings, Structures & Components

Recv by NBS : 12/03/80

Recom. by NBS : 06/28/82

Award Date : 04/04/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15174

Contract Period: 04/04/84 - 01/02/86

Summary: A grant of \$50,000 was authorized on April 4th, 1984, for building and testing a fiberglass reclaiming machine. Inventor terminated grant during performance due to problems with sub-contractor.

DOE No: 0210

DOE Coord: G. K. ELLIS

Title: Ultra High Speed Drilling Device for Use in Hard Rock Formations

Description: A diamond cutting disk which is rotated at high linear velocities by twin downhole turbines to drill hard rock formations for deep oil recovery.

Inventor: Lloyd Flatland
State : CA

Contact:
Lloyd Flatland
Lloyd Flatland Dental Products
496 "B" Street
San Rafael CA 94901
415-457-5790

Status: Complete

Status Date: 09/30/88

OERI No.: 007631

Patent Status : Disclosure Document Program
Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv by NBS : 10/03/80

Recom. by NBS : 06/29/82

Award Date : 09/30/86 Award Amount: \$ 96,000 Grant No: FG01-84CE15185

Contract Period: 09/30/86 - 09/30/88

Summary: A phase I grant of \$46,000 was awarded On August 28, 1984, to build and test a prototype high-speed drill. Suitability to drill hard rock will be determined. Phase I has been successfully completed. A phase II grant of \$50,000 was awarded on November 4th, 1985 for further development and has been completed. However, some difficulties were encountered, and the inventor seeks additional development funds.

DOE No: 0211 DOE Coord: J. AELLEN

Title: Shock Mounted Stratapax Bit

Description: An oil well drilling bit to support polycrystalline diamond cutters. It is designed with concentric spring tempered steel rings containing helical slots.

Inventor: Robert F Evans
State : TX

Contact:
Robert F Evans
P O Box #45674
Dallas TX 75235
214-351-6487

Status: Complete Status Date: 06/30/86 OERI No.: 007918

Patent Status : Patent Applied For
Development Stage : Concept Definition
Technical Category: Fossil Fuels

Recv by NBS : 12/18/80
Recom. by NBS : 06/29/82
Award Date : 09/24/82 Award Amount: \$ 57,545 Grant No: FG01-82CE15149
Contract Period: 09/24/82 - 02/28/84

Summary: A grant of \$57,545 was awarded for the grantee to design, fabricate and test, four variations of the invention.

DOE No: 0212 DOE Coord: G. K. ELLIS

Title: Water Warden

Description: A plastic disc about two inches in diameter that installs in a commercial type of toilet water control valve to reduce the flushing cycle.

Inventor: Louis E Govear
State : CA

Contact:
Hugh Huislander

Status: Other Assistance Status Date: / / OERI No.: 008517

Patent Status : Patent # - 4202525
Development Stage : Production & Marketing
Technical Category: Buildings, Structures & Components

Recv by NBS : 06/14/81
Recom. by NBS : 06/30/82

Summary: Inventor requested assistance in marketing his invention in the Federal sector. A DOE letter of introduction and a listing of States' contacts has been provided.

DOE No: 0213

DOE Coord: G. K. ELLIS

Title: The Kaunitz Process for Welding Pipe

Description: A pipe joining process particularly for large transmission pipelines that involves expanding and machining each end and then aligning both sections axially and radially prior to welding.

Inventor: Clyde F Kaunitz
State : MI

Contact:
Clyde F Kaunitz
2339 Bay Woods Court
Bay City MI 48706
517-684-7354

Status: Complete

Status Date: 08/06/87

OERI No.: 008110

Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv by NBS : 02/20/81

Recom. by NBS : 06/30/82

Award Date : 06/11/86

Contract Period: 06/11/86 - 03/11/87

Award Amount: \$ 49,975 Grant No: FG01-86CE15267

Summary: A grant of \$49,975 was awarded on June 11th, 1986 to build and test a prototype. The device was built by CRC-Evans in Tulsa, and reportedly was successfully tested.

DOE No: 0214

DOE Coord: G. K. ELLIS

Title: Convertible Flat/Drop Trailer

Description: A removable bed trailer, constructed in three sections, that enables a single unit to function as a flat-bed trailer, drop-center trailer or a detachable-neck light-duty trailer.

Inventor: Donald E Wise
State : OR

Contact:
Donald E Wise
5119 Jasper
Springfield OR 97447
503-747-9255

Status: Complete

Status Date: 07/15/86

OERI No.: 008723

Patent Status : Patent # - 4290642
Development Stage : Production Engineering
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 11/02/81

Recom. by NBS : 07/29/82

Award Date : 09/18/84

Contract Period: 09/18/84 - 12/15/85

Award Amount: \$ 63,069 Grant No: FG01-84CE15175

Summary: A grant of \$63,069 was awarded on September 18, 1984 to build and test a prototype convertible trailer to determine fuel savings. The inventor has licensed his technology to Trail King Company in Nebraska.

DOE No: 0215 DOE Coord: G. K. ELLIS

Title: Slag Waste Heat Boiler

Description: A slag waste heat boiler which produces wet steam from steel plant heat during the steel making process. Molten slag, a by-product, is poured over water-filled rotating cylinders. Steam is formed inside the cylinders and the solidified slag is scraped from the cylinders.

Inventor: Richard Jablin
State : NCContact:
Richard Jablin
2511 Woodrow Street
Durham NC 27705
919-286-4693

Status: Award Status Date: 07/15/86 OERI No.: 002333

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Industrial Processes

Recv by NBS : 06/07/77

Recom. by NBS : 06/29/82

Award Date : 06/11/86 Award Amount: \$ 50,000 Grant No: FG01-86CE15264

Contract Period: 06/11/86 - 06/11/87

Summary: A grant was awarded for \$50,000 on June 11th, 1986 to support the inventor in marketing the technology as part of EPA SBIR Phase II project. The deal the inventor anticipated has not yet materialized.

DOE No: 0216 DOE Coord: D. G. MELLO

Title: Method and Assembly for Mounting a Semiconductor Element

Description: A method of packaging semiconductor wafers to achieve double-sided cooling of the wafer without clamps, springs or studs; power semi-conductors, such as used in motor controllers, can thus operate at higher current levels.

Inventor: Richard F Kiley
State : MAContact:
Richard F Kiley
Thermal Associates Inc
197 Main Street, P O Box #248
North Reading MA 01864
617-664-3342

Status: Complete Status Date: 12/31/85 OERI No.: 008499

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Combustion Engines & Components

Recv by NBS : 07/07/81

Recom. by NBS : 07/30/82

Award Date : 09/20/84 Award Amount: \$ 53,900 Grant No: FG01-84SE15199

Contract Period: 09/20/84 - 09/20/85

Summary: A grant of \$53,900 was awarded to build and test prototype semiconductor elements. Market conditions precluded grantee from developing viable market plans for the product.

DOE No: 0219 DOE Coord: J. AELLEN

Title: Method for Making Acetaldehyde from Ethanol

Description: A process to convert low proof ethanol directly to anhydrous acetaldehyde by an electrogenerative conversion process using fuel cell technology. During the conversion heat and electricity are produced.

Inventor: Thomas M Meshbesher
State : DEContact:
Thomas M Meshbesher
4507 Weldin Road
Wilmington DE 19899
302-658-9141

Status: Complete Status Date: 06/30/86 OERI No.: 008054

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Combustion Engines & ComponentsRecv by NBS : 02/05/81
Recom. by NBS : 07/30/82
Award Date : 09/18/84 Award Amount: \$ 49,983 Grant No: FG01-84CE15191
Contract Period: 09/18/84 - 09/18/85

Summary: A grant of \$49,983 was awarded to perform an economic study and mineral lab work to determine the most efficient conditions for converting ethanol into acetaldehyde and electricity.

DOE No: 0220 DOE Coord: D. G. MELLO

Title: Deep Throat Resistance Welder

Description: A high-frequency spot-welding system which permits relatively small and flexible power cabling between the gun and the power source as compared with the heavy cabling required of either 60-hertz or DC systems. This allows a greater proportion of the power-line energy being transferred to the weld rather than dissipated in the system conductors.

Inventor: Charles A Schwartz
State : OHContact:
Charles A Schwartz
24545 Bryden Road
Beachwood OH 44122
216-831-3099

Status: Complete Status Date: 08/31/85 OERI No.: 007767

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 11/04/80
Recom. by NBS : 08/30/82
Award Date : 09/19/84 Award Amount: \$ 45,920 Grant No: FG01-84CE15192
Contract Period: 09/19/84 - 09/18/85

Summary: A grant of \$45,920 was awarded on September 14, 1984 to build and test a prototype. The tests confirmed theoretical analysis showing the merits of the new system. Grantee attempting licensing of product.

DOE No: 0221 DOE Coord: J. AELLEN

Title: Strainercycle

Description: A means for providing cooling in a building, when the outside temperature drops below 65 degrees Fahrenheit, by injecting strained cooling tower water into chilled water circuits in order to eliminate the use of mechanical refrigeration during this time.

Inventor: Rudolf O Iverson
State : NYContact:
Paul Ginouves

Status: Other Assistance Status Date: 09/23/82 OERI No.: 008964

Patent Status : Patent # - 3995443
Development Stage : Production & Marketing
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 03/25/82
Recom. by NBS : 09/13/82

Summary: ERIP identified government market for inventor.

DOE No: 0222 DOE Coord: D. G. MELLO

Title: Louver Trombe Solar Storage Unit

Description: A jalousie shutter, Trombe-type, phase change storage unit. Each shutter is prism shaped and exposes, alternately, a transmission, absorption or combination, side toward the sun.

Inventor: Donald R Thomas
State : VTContact:
Donald R Thomas

Status: Other Assistance Status Date: / / OERI No.: 007979

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Direct SolarRecv by NBS : 01/15/81
Recom. by NBS : 10/07/82

Summary: ERIP assistance has been completed. Referred to National Appropriate Technology Assistance Service (NATAS) for assistance.

DOE No: 0225 DOE Coord: J. AELLEN

Title: ROVAC High Efficiency Low Pressure Air Conditioning System

Description: An air conditioning unit which utilizes rotary vane compressor with multiple vanes and low pressure refrigerant such as R-114. The vanes in the compressor are mechanically restrained so that they do not touch the casing.

Inventor: Thomas C Edwards
State : FL

Contact:
Thomas C Edwards
1426 Gleneagle
Rockledge FL 32955
305-631-0302

Status: Award Status Date: 07/22/88 OERI No.: 008593

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 08/24/81
Recom. by NBS : 10/28/82
Award Date : 07/22/88 Award Amount: \$ 64,900 Grant No: FG01-88CE15346
Contract Period: 07/22/88 - 01/20/90

Summary: A grant of \$64,900 was awarded on July 22nd, 1988.

DOE No: 0226 DOE Coord: D. G. MELLO

Title: An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings

Description: An electronic anemometer system for detection and location of air infiltration in residential and commercial structures. A fan creates a negative pressure inside the structure and an electronic leak detector detects air motion at cracks in the building.

Inventor: Stewart Ryan
State : OK

Contact:
Stewart Ryan

Status: No DOE Support Status Date: 07/31/85 OERI No.: 008826

Patent Status : Not Applied For
Development Stage : Prototype Development
Technical Category: Buildings, Structures & Components

Recv by NBS : 12/28/81
Recom. by NBS : 11/29/82

Summary: Action temporarily suspended at inventors request. Inventor sold six month option. Inventor subsequently abandoned project. Competing products now exist.

DOE No: 0227

DOE Coord: D. G. MELLO

Title: CRM Pipe

Description: A process for manufacturing pipe for high pressure gas transmission lines. Metal pipe is wound with resin impregnated composite-fibre reinforcement.

Inventor: Norman C Fawley
State : CA

Contact:
Norman C Fawley
NCF Industries
2320 Cherry Industrial Circle
Long Beach CA 90805
213-630-5768

Status: Complete

Status Date: 12/31/85

OERI No.: 009055

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Miscellaneous

Recv by NBS : 03/01/82

Recom. by NBS : 12/14/82

Award Date : 07/15/84

Contract Period: 07/15/84 - 07/15/85

Award Amount: \$ 50,000 Grant No: FG01-84CE15197

Summary: A grant of \$50,000 was awarded to test inventor's device to arrest crack propagation in gas pipelines. Tests at Battelle prove value of system. Grantee attempting to license to major steel pipe manufacturer.

DOE No: 0228

DOE Coord: J. AELLEN

Title: EGD Fog Dispersal System

Description: An electrogasdynamic device for dispersing fog that propels a stream of negatively charged water droplets into the air causing fog droplets to become charged and electrically attracted to the ground.

Inventor: Meredith C Gourdine
State : TX

Contact:
Meredith C Gourdine
Post Office Box #1228
Friendswood TX 77546
713-790-9892

Status: Award

Status Date: 07/26/85

OERI No.: 008466

Patent Status : Patent # -
Development Stage : Prototype Development
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/19/81

Recom. by NBS : 12/15/82

Award Date : / /

Contract Period: / / - / /

Award Amount: \$ 88,840 Grant No: FG01-84CE15184

Summary: An \$88,840 cost sharing grant was awarded to install and demonstrate the technology at the Elmira, New York airport.

DOE No: 0235

DOE Coord: G. K. ELLIS

Title: Single Stage Anaerobic Digestion Process

Description: A process for accelerating the manufacture of relatively high-purity methane fuel gas through a process of anaerobic digestion, involving retention of organic material in an aqueous slurry which is maintained at a predetermined V/I ratio, temperature, and minimizes the production of carbon dioxide.

Inventor: Jay E Ort
State : PA

Contact:
Harry Curtin
Penn State Engineering Inc
522 East College Avenue
P O Box #177
State College PA 16801
814-238-5013

Status: Complete

Status Date: 12/04/85

OERI No.: 008644

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv by NBS : 09/18/81

Recom. by NBS : 03/30/83

Award Date : 04/02/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15170

Contract Period: 04/02/84 - 12/04/85

Summary: A phase one grant of \$50,000 was awarded on April 2, 1984 to study and optimize the basic parameters of the process. The first run of tests were not successful due to defective equipment. Another series of tests was performed. The process is not as efficient as anticipated, and it is not economically feasible. Consequently, phase two of this project will not be initiated.

DOE No: 0236

DOE Coord: A. R. BARNES

Title: Steam Turbine Packing Ring

Description: A self-adjusting steam turbine packing ring that provides large shaft clearance during turbine start-up and reduced shaft clearance at normal turbine operating speeds. This action avoids packing ring damage during start-up and results in higher operating efficiency. A private sector public-utility is funding further development.

Inventor: Ronald E Brandon
State : NY

Contact:
Ronald E Brandon
1734 Lenox Road
Schenectady NY 12308
518-374-1220

Status: Complete

Status Date: 07/02/87

OERI No.: 009167

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Combustion Engines & Components

Recv by NBS : 10/25/82

Recom. by NBS : 04/07/83

Award Date : 08/08/84 Award Amount: \$ 51,900 Grant No: FG01-84CE15189

Contract Period: 08/08/84 - 07/02/86

Summary: Development was completed in 1987. Operating tests on 200MW PEPCO unit indicate 1.25% gain in heat rate efficiency. Exclusive license with Quabbin Industries, a manufacturer of steam turbine components, was signed in 1987. In the first year of his license, 37 sets were sold, which includes a number of repeat orders.

DOE No: 0241 DOE Coord: J. AELLEN
Title: Polysulfide Oil Field Corrosion Control System
Description: A polysulfide additive to inhibit the corrosion of ferrous based metals in oil field and geothermal applications.
Inventor: Richard J Gay Contact:
State : TX Richard J Gay
9215 Clarewood - #358
Houston TX 77036
713-498-8553
Status: Award Status Date: 12/07/84 OERI No.: 008601
Patent Status : Not Applied For
Development Stage : Prototype Development
Technical Category: Fossil Fuels
Recv by NBS : 08/24/81
Recom. by NBS : 07/28/83
Award Date : 12/07/84 Award Amount: \$ 73,900 Grant No: FG01-85CE15200
Contract Period: 12/07/84 - 09/05/85
Summary: A grant of \$73,900 was awarded on December 7th, 1984 to perform lab test, analysis and field test.

DOE No: 0242 DOE Coord: G. K. ELLIS
Title: New Petersburg Beam Trawl
Description: An improved trawl design to reduce drag for either single rigged or double rigged vessels.
Inventor: Donald Shuler Contact:
State : AK Donald Shuler
General Delivery
Petersburg AK 99833
907-772-3038
Status: Complete Status Date: 06/30/86 OERI No.: 009310
Patent Status : Disclosure Document Program
Development Stage : Prototype Development
Technical Category: Industrial Processes
Recv by NBS : 12/22/82
Recom. by NBS : 09/29/83
Award Date : 09/05/84 Award Amount: \$ 63,000 Grant No: FG01-84CE15180
Contract Period: 09/05/84 - 09/05/85
Summary: A grant of \$63,000 was awarded on September 5, 1984 to build and test a prototype beam-trawl fishing net to determine fuel efficiency per pound of catch. The inventor failed to submit quarterly technical reports. The beam trawl nets were built but never tested in the presence of an independent observer from the Sea Grant Program. Inventor's whereabouts are unknown. The contracting officer was informed of this fact. Further pursuit was determined not to be in the government's best interests.

DOE No: 0247

DOE Coord: D. G. MELLO

Title: Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems

Description: In an interconnected electric power system, the parameters' system time deviation and area inadvertent interchange can be decomposed into components respectively caused by regulating deficiencies in each of the individual control areas. These components can serve as the basis for an equitable payment technique for unscheduled transfers to replace the present practice of "repayment in kind".

Inventor: Nathan Cohn
State : PA

Contact:
Nathan Cohn
8033 Via de Viva
Scottsdale AZ 85258
602-991-7063

Status: Complete

Status Date: 10/30/86

OERI No.: 009342

Patent Status : Patent # - 4267571
Development Stage : Prototype Development
Technical Category: Miscellaneous

Recv by NBS : 01/19/83
Recom. by NBS : 11/18/83
Award Date : 09/05/84 Award Amount: \$ 60,000 Grant No: FG01-84CE15187
Contract Period: 09/05/84 - 02/15/86

Summary: A grant of \$60,000 was awarded to study the uneconomical inadvertent interchange of electric power between a number of cooperating electric utility companies, and to recommend a method to correct the resulting energy losses. Grantee will license method to interested utilities.

DOE No: 0248

DOE Coord: J. AELLEN

Title: Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like

Description: A device consisting of individual tire segments that are strapped to the driving wheels of a tractor or similar vehicle to improve traction and minimize the need for adding weight to get better traction.

Inventor: Thorvald G Granryd
State : IL

Contact:
Thorvald G Granryd
P O Box #258
1260 North Western Avenue
Apartment #109
Lake Forest IL 60045
312-234-8250

Status: Award

Status Date: 09/18/84

OERI No.: 008617

Patent Status : Patent # - 4225082 and others
Development Stage : Production Engineering
Technical Category: Industrial Processes

Recv by NBS : 08/12/81
Recom. by NBS : 11/22/83
Award Date : 09/18/84 Award Amount: \$ 70,189 Grant No: FG01-84CE15186
Contract Period: 09/18/84 - 12/31/85

Summary: A grant of \$32,064 was awarded on September 18, 1985 to build and test prototype traction intensifiers. Tests performed for traction were successful, but the device had minor durability problems. A phase two grant of \$35,525 was awarded to develop design modifications capable of overcoming problems.

DOE No: 0261 DOE Coord: G. K. ELLIS

Title: A New Apparatus for Making Asphalt Concrete

Description: An asphalt concrete manufacturing process that reduces energy requirements by recovering the latent heat of vaporization from the moisture removed during the manufacturing process and eliminates air pollution by using modern heat transfer methods.

Inventor: Paul E Bracegirdle Contact:
State : PA Paul E Bracegirdle

Status: Other Assistance Status Date: 09/17/85 OERI No.: 009690

Patent Status : Patent # - 4378162 and others
Development Stage : Production Engineering
Technical Category: Industrial Processes

Recv by NBS : 09/06/83
Recom. by NBS : 05/24/84

Summary: Inventor licensed his technology to a foreign company. There is no further action required of DOE.

DOE No: 0262 DOE Coord: J. AELLEN

Title: Energy Saving Pump and Pumping System

Description: A centrifugal pump and pumping system that automatically provide recirculating flow at low output flows when pump cooling is needed, and that recover hydraulic energy in response to reduced output flows.

Inventor: Kai-Chih Cheng Contact:
State : WA Kai-Chih Cheng
 Innovative Tech Laboratory
 2339 Davison Avenue
 Richland WA 99336
 509-582-2660

Status: Award Status Date: 04/17/85 OERI No.: 009691

Patent Status : Patent # - 4396347
Development Stage : Working Model
Technical Category: Miscellaneous

Recv by NBS : 09/06/83
Recom. by NBS : 06/20/84
Award Date : 04/17/85 Award Amount: \$ 85,837 Grant No: FG01-85CE15207
Contract Period: 04/17/85 - / /

Summary: A grant of \$85,837 was awarded on April 17th, 1985 to build and test the proposed pump.

DOE No: 0273 DOE Coord: P. M. HAYES
Title: Open Cycle Latent Heat Engine
Description: A novel engine that uses relatively low temperature water as a heat source.
Inventor: Julius Czaja Contact:
State : NY Julius Czaja
Status: No DOE Support Status Date: 09/13/85 OERI No.: 009866
Patent Status : Patent # - 4106294
Development Stage : Concept Development
Technical Category: Combustion Engines & Components
Recv by NBS : 12/07/83
Recom. by NBS : 09/27/84
Summary: DOE had two meetings and several telephone conversations with the inventor. He cannot decide what course of action to follow. No work proposal has been submitted by the inventor.

DOE No: 0274 DOE Coord: T. LEVINSON
Title: Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
Description: A lighting system consisting of electrodeless gas- containing capsules, strung in a clear plastic tubular jacket. The capsules are excited by standing waves produced by a radio frequency generator.
Inventor: Nathan E Passman Contact:
State : CO Nathan E Passman
 Illuminating Technology Corp
 2516 Forty-Ninth Street
 Unit Six
 Boulder CO 80301
 303-440-4486
Status: Complete Status Date: 05/28/87 OERI No.: 007911
Patent Status : Patent # - 3157823 and others
Development Stage : Production & Marketing
Technical Category: Miscellaneous
Recv by NBS : 12/31/80
Recom. by NBS : 09/28/84
Award Date : 09/30/85 Award Amount: \$ 79,590 Grant No: FG01-85CE15244
Contract Period: 09/30/85 - 09/29/86
Summary: A one-year grant of \$79,590 was awarded to design, build, and demonstrate the unique lighting system. Bridge structures and coal mine passageways will be the first two applications. The final report was received on May 28th, 1987.

DOE No: 0283 DOE Coord: P. M. HAYES

Title: Aluminum Roofing Chips

Description: A reflective coating for application to built-up roofing. Aluminum chips are spray-applied to surfaces with good adhesion.

Inventor: Tom Atterbury
State : OHContact:
Donald Cullen
Transmet Corporation
4290 Perimeter Drive
Columbus OH 43228
614-276-5522

Status: Complete Status Date: 08/07/87 OERI No.: 010182

Patent Status : Patent # -
Development Stage : Working Model
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 05/17/84
Recom. by NBS : 12/18/84
Award Date : 06/27/85 Award Amount: \$ 78,878 Grant No: FG01-85CE15232
Contract Period: 06/27/85 - 02/01/87

Summary: A grant of \$78,878 was awarded on June 27th, 1985 to optimize the size, shape and composition of the aluminum roofing chip system. Tests showed 30-40% energy saving in summer due to the high reflectivity of the Al chips and 10% savings in winter due to low emissivity. The product is gaining acceptance in the market. The company expects several million dollars in sales in 1989.

DOE No: 0284 DOE Coord: P. M. HAYES

Title: Atomized Oil-Injected Rotary Screw Compressors

Description: An atomized oil-injection system to improve the power and volumetric efficiencies of the rotary compressors.

Inventor: Anthony N Fresco
State : NYContact:
David R Tree
Ray W Herrick Laboratories
Purdue University
West Lafayette IN 47907
317-494-2138

Status: Award Status Date: 02/24/87 OERI No.: 009662

Patent Status : Not Applied For
Development Stage : Concept Definition
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 08/22/83
Recom. by NBS : 01/24/85
Award Date : 02/24/87 Award Amount: \$ 74,993 Grant No: FG01-86CE15245
Contract Period: 02/24/87 - 08/23/88

Summary: A grant of \$74,993 was awarded on February 24th, 1987, to test the atomized oil injection concept for improved efficiency at Purdue University's Herrick Laboratory.

DOE No: 0287

DOE Coord: J. AELLEN

Title: Automatic Variable Pitch Marine Propeller

Description: A variable geometry marine propeller having the blades pivoted and balanced so as to automatically adjust propeller pitch, diameter, and basic area ratio in response to shaft speed and hydrodynamic load, thereby enabling the driving engine to function at optimum RPM and fuel efficiency over a broad range of hull speeds and loadings.

Inventor: Don J Marshall
State : MD

Contact:
Don J Marshall
1087 Rodgers Road
P O Box #159
Churchton MD 20733
301-867-2135

Status: Complete

Status Date: 09/06/85

OERI No.: 010259

Patent Status : Patent # - 4297079 and others

Development Stage : Prototype Test

Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/26/84

Recom. by NBS : 01/25/85

Award Date : 09/06/85 Award Amount: \$ 41,593 Grant No: FG01-85CE15243

Contract Period: 09/06/85 - 12/15/87

Summary: A grant of \$41,593 was awarded on September 6, 1985, to build and test the proposed propeller. The test took place at Mississippi State University in cooperation with Sea Grant Advisory Service.

DOE No: 0288

DOE Coord: G. K. ELLIS

Title: Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)

Description: A method of burning coal or coal/water/mixture at high pressure without resultant air pollution.

Inventor: Norman L Dickinson
State : CA

Contact:
Norman L Dickinson

Status: Decision Phase

Status Date: 08/06/87

OERI No.: 010307

Patent Status : Patent # - 4380960 and others

Development Stage : Engineering Design

Technical Category: Buildings, Structures & Components

Recv by NBS : 07/23/84

Recom. by NBS : 01/30/85

Summary: Procurement request prepared. Decision pending whether or not to support.

DOE No: 0293 DOE Coord: J. AELLEN

Title: "Therm-A-Valve" - Insulated Valve Coverings

Description: A solar powered system to keep critical flow control valves from freezing on gas wells during cold weather.

Inventor: Randell D Ball
State : OKContact:
PFI, Inc
128 Northwest 67th Street
Oklahoma City OK 73116
405-354-4584

Status: Award Status Date: 07/21/87 OERI No.: 010130

Patent Status : Patent Applied For
Development Stage : Limited Production/Marketing
Technical Category: Fossil FuelsRecv by NBS : 04/24/84
Recom. by NBS : 03/29/85
Award Date : 01/21/86 Award Amount: \$ 56,193 Grant No: FG01-86CE15254
Contract Period: 01/21/86 - 03/31/90

Summary: A grant for \$56,193 was awarded on January 1, 1986 to build and test prototype valve covers, first in the laboratory and then in the field, under actual conditions.

DOE No: 0294 DOE Coord: G. K. ELLIS

Title: Highway Power Patcher

Description: A portable self-propelled pavement patching machine which blows debris from a distressed area of pavement, mixes and applies an unheated crushed rock and asphalt patching material, and compacts the patch by means of a roller.

Inventor: Carl L Sterner
State : CAContact:
Carl L Sterner
Route Four, Box #372
Bakersfield CA 93309
805-589-3355

Status: Complete Status Date: 08/15/86 OERI No.: 010077

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 03/20/84
Recom. by NBS : 03/29/85
Award Date : 08/15/85 Award Amount: \$ 60,031 Grant No: FG01-85CE15241
Contract Period: 08/15/85 - 08/15/86

Summary: A grant of \$60,031 was awarded on August 15, 1985 to build and test a self-propelled highway pavement patching machine. Mr. Sterner has received numerous inquiries about his machine from all over the U.S., and seeks to license the technology.

DOE No: 0297 DOE Coord: J. AELLEN

Title: Series (Two-Wire) V-Controller

Description: An electronic light dimmer for fluorescent lamps, that will mount in a single two-wired switch box without the need for re-wiring or replacing conventional lamp ballasts with "dimming" ballasts.

Inventor: E M Talbott
State : MDContact:
Varigas Research, Inc
P O Box #489
1717 York Road
Lutherville-Timonium MD 21093
301-252-6230

Status: Award Status Date: 04/02/87 OERI No.: 010261

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 07/05/84
Recom. by NBS : 03/29/85
Award Date : 08/19/85 Award Amount: \$ 70,785 Grant No: FG01-85CE15233
Contract Period: 08/19/85 - 10/01/88

Summary: A grant of \$51,180 was awarded on August 198, 1985 to design and build a prototype. Tests will be conducted in phase II.

DOE No: 0298 DOE Coord: J. AELLEN

Title: Three Tenths Degree Kelvin Closed Cycle Refrigeration System

Description: Closed cycle refrigeration system to provide cooling to, 0.3 Kelvin. Does not consume helium or other liquid cryogens.

Inventor: David L Swartz
State : AZContact:
David L Swartz
Cryosystems, Inc.
1802 West Grant, Suite #122
Tucson AZ 85745
602-882-4628

Status: Award Status Date: 04/05/86 OERI No.: 010254

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 06/28/84
Recom. by NBS : 04/19/85
Award Date : 04/05/86 Award Amount: \$ 63,500 Grant No: FG01-85CE15248
Contract Period: 04/05/86 - 11/05/87

Summary: A grant of \$63,500 was awarded on April 5, 1986 to build and test a prototype.

DOE No: 0301 DOE Coord: J. AELLEN

Title: Pump Control System for Windmills

Description: A mechanism for automatically controlling the stroke of wind-driven water-pumps so as to match pump operation to the available wind energy

Inventor: Don E Avery
State : HIContact:
Don E Avery
45-437 Akimala Street
Kaneohe HI 96744
808-247-1909

Status: Complete Status Date: 06/03/87 OERI No.: 010469

Patent Status : Patent # - 4392785
Development Stage : Limited Production/Marketing
Technical Category: MiscellaneousRecv by NBS : 11/02/84
Recom. by NBS : 04/30/85
Award Date : 06/04/86 Award Amount: \$ 43,625 Grant No: FG01-86CE15279
Contract Period: 06/04/86 - 06/03/87

Summary: A \$43,625 grant was issued to build, install and demonstrate a variable stroke pump control system for an EDA aquaculture project at Kealia Pond, Maa Laea, Maui, Hawaii. The County of Maui is cost-sharing. See invention

275 for related work.

DOE No: 0302 DOE Coord: J. AELLEN

Title: Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers

Description: A vertical shaft impact rock breaker having a direct-drive vertical shaft motor - and - an impact rock breaker in which the thrown rock is directed back toward the impeller so that most rock breakage occurs during collisions of thrown and returning rock.

Inventor: John H Burk
State : CAContact:
Phil Tippet
Carri-Cel, Inc
P O Box #4552
Cleveland TN 37311
615-489-1187

Status: Complete Status Date: 09/29/86 OERI No.: 010539

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Industrial ProcessesRecv by NBS : 12/13/84
Recom. by NBS : 04/30/85
Award Date : 09/29/86 Award Amount: \$ 75,000 Grant No: FG01-86CE15292
Contract Period: 09/29/86 - 09/28/88

Summary: A grant of \$75,000 was awarded on September 29th, 1986 to build and test a prototype.

DOE No: 0303 DOE Coord: J. AELLEN

Title: Battery Heating Device

Description: An automotive battery heating device which stores exhaust heat in a phase-change storage material and which includes the necessary heat exchangers and controls to transfer heat to the battery to facilitate cold weather starting.

Inventor: Nicholas Archer Sanders
State : VT

Contact:
Nicholas Archer Sanders
Eleven Green Ridge Road
Route One, Box #175
Norwich VT 05015
802-649-3869

Status: Complete Status Date: 02/28/86 OERI No.: 010170

Patent Status : Patent # - 4258677
Development Stage : Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 05/11/84
Recom. by NBS : 05/31/85
Award Date : 02/28/86 Award Amount: \$ 71,500 Grant No: FG0186CE15257
Contract Period: 02/28/86 - 04/27/88

Summary: A grant of \$71,500 was awarded on February 28th, 1986, to build and test a model.

DOE No: 0304 DOE Coord: G. K. ELLIS

Title: Exfoliated Graphite Fibers

Description: A new material, exfoliated graphite fibers, a novel form of composite fiber, and a method for producing them.

Inventor: Deborah D Chung
State : PA

Contact:
Deborah D Chung
3812 Henley Drive
Pittsburgh PA 15235
412-578-2710

Status: Complete Status Date: 09/30/86 OERI No.: 010315

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Miscellaneous

Recv by NBS : 07/31/84
Recom. by NBS : 05/31/85
Award Date : 09/30/86 Award Amount: \$ 80,000 Grant No: FG01-86CE15282
Contract Period: 09/30/86 - 05/03/88

Summary: A grant of \$80,000 was awarded on September 30, 1986 to fabricate and test the material. The results were encouraging.

DOE No: 0313

DOE Coord: P. M. HAYES

Title: Process Controller for Stripper Oil Well Pumping Units

Description: A programmable microprocessor control system that determines the optimum pumping speed of a beam oil well pump by comparing the wave form of current flow during each pumping cycle to a wave form stored in memory. Based on the results of the comparison, the controller either modifies the pumping speed or shuts the pump off for a given period of time. The device is primarily intended for stripper wells.

Inventor: Frank J Madison II
State : PA

Contact:
Frank J Madison II
608 Hill Street
Reynoldsville PA 15851
814-653-2155

Status: Complete

Status Date: 01/20/87

OERI No.: 010425

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv by NBS : 10/02/84
Recom. by NBS : 08/13/85
Award Date : 01/21/86 Award Amount: \$ 85,000 Grant No: FG01-86CE15253
Contract Period: 01/21/86 - 01/20/87

Summary: A grant of \$85,000 was awarded on January 21, 1986, to design, test and demonstrate a prototype of a process controller which maximizes production of beam-type pumping oil wells. Inventor is test marketing "OPC Model 100" for approximately \$950 each and contemplates sales of forty units per month by the end of 1988.

DOE No: 0314

DOE Coord: T. LEVINSON

Title: Rolling Filter Apparatus

Description: An air filtration system wherein a long filter mat is drawn in a zig-zag path across an air flow path to give multiple filtration passages of the air through the filter mat. The mat is continuously drawn from a large roll such that fresh filter surface is continuously fed through the filter chamber. The used mat is discarded.

Inventor: Max Klein
State : MA

Contact:
Max Klein
Sixty-Four Euclid Avenue
Pittsfield MA 01201
413-499-3351

Status: Award

Status Date: 08/18/86

OERI No.: 010734

Patent Status : Patent # - 4394146
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NBS : 03/15/85
Recom. by NBS : 08/30/85
Award Date : 08/18/86 Award Amount: \$ 67,500 Grant No: FG01-86CE15286
Contract Period: 08/18/86 - 12/30/88

Summary: A \$67,000 grant was issued on August 18th, 1986, for the purpose of designing, manufacturing and operating a prototype filter apparatus to be put into demonstration service in cooperating industrial factories. The grantee will contribute \$7,500 for special engineering and marketing activities associated with the demonstrations.

DOE No: 0325 DOE Coord: P. M. HAYES

Title: Low Cost, Low Energy Machine and Method for Continuous Casting
Non-Ferrous Strip and Composites

Description: A process for continuous casting of non-ferrous and composite
materials into thin strips.

Inventor: Forrest M Palmer
State : SC

Contact:
Forrest M Palmer
Thirty-One Towhee Road
Hilton Head SC 29928
803-681-8887

Status: Complete Status Date: 08/08/86 OERI No.: 009934

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 01/12/84
Recom. by NBS : 09/30/85
Award Date : 08/08/86 Award Amount: \$ 47,357 Grant No: FG01-86CE15285
Contract Period: 08/08/86 - 01/31/88

Summary: A grant of \$47,357 was awarded on August 8, 1986, to test the
feasibility and operating characteristics of Mr. Palmer's
continuous casting method. Additional testing is necessary to
demonstrate the technical feasibility of the process.

DOE No: 0326 DOE Coord: G. K. ELLIS

Title: A Mechanical Stemming Device for Use in Explosive Loaded Blast
Holes

Description: A conical wedge used to improve confinement of an explosive
charge to a drilled hole, increasing the rock fragmentation
performance of the explosive.

Inventor: Paul N Worsley
State : MO

Contact:
F Terry Nixon
Route Four, Box #519
Rolla MO 65401
314-364-7747

Status: Complete Status Date: 09/22/86 OERI No.: 010667

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Miscellaneous

Recv by NBS : 02/28/85
Recom. by NBS : 10/31/85
Award Date : 09/22/86 Award Amount: \$ 78,251 Grant No: FG01-86CE15297
Contract Period: 09/22/86 - 03/21/88

Summary: A grant of \$78,251 was awarded on September 22, 1986 to build and
test a workable prototype. Tests were encouraging. Decision to be
made whether to venture or license the technology.

DOE No: 0333 DOE Coord: J. AELLEN

Title: Laser Based Machine for Die and Prototype Manufacturing

Description: A method for manufacturing dies and molds using automated laser cutting of thin metal sheets and bonding of the sheets into the required three- dimensional forms.

Inventor: Michael Feygin
State : IL

Contact:
Michael Feygin
Hydronetics
3832 North Ashland Avenue
Chicago IL 60626
312-764-8691

Status: Complete Status Date: 02/10/87 OERI No.: 010745

Patent Status : Disclosure Document Program
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 03/27/85
Recom. by NBS : 12/31/85
Award Date : 02/10/87 Award Amount: \$ 70,000 Grant No: FG01-87CE15316
Contract Period: 02/10/87 - 08/09/88

Summary: A \$70,000 grant was awarded on February 10, 1987, to build and test the technology.

DOE No: 0334 DOE Coord: G. K. ELLIS

Title: So-Luminaire Natural Daylighting Unit

Description: An active, sun-tracking mirror/skylight system, to reflect natural light into the occupied space for illumination in lieu of electric lights. The reflecting mirror closes upon the skylight opening at night and during periods of high winds.

Inventor: Richard Lee Dominquez
State : AZ

Contact:
William Lindner

Status: Decision Phase Status Date: 09/23/88 OERI No.: 010728

Patent Status : Patent # - 4429952
Development Stage : Limited Production/Marketing
Technical Category: Direct Solar

Recv by NBS : 03/12/85
Recom. by NBS : 12/31/85

Summary: Awaiting statement of work. Delays have been experienced as a result of So-Luminaire selling the invention, and only recently having repossessed it.

DOE No: 0351 DOE Coord: P. M. HAYES

Title: Flash Gate Board

Description: An automatically actuated water control gate to be mounted on top of a reservoir overflow structure to increase head and storage volume.

Inventor: William Martin Johnson
State : VAContact:
William Martin Johnson
Route Four, Box #265
Lynchburg VA 24503
804-384-2496

Status: Complete Status Date: 02/02/87 OERI No.: 010826

Patent Status : Patent # - 4455106
Development Stage : Engineering Design
Technical Category: Other Natural SourcesRecv by NBS : 05/18/85
Recom. by NBS : 04/09/86
Award Date : 02/02/87 Award Amount: \$ 47,661 Grant No: FG01-87CE15309
Contract Period: 02/02/87 - 05/01/88

Summary: A grant of \$47,661 was awarded to the Virginia Polytechnic Institute on February second, 1987, to develop mathematical models to examine flash gate behavior. Grant objectives were successfully met. Inventor is seeking financing to build and test full scale working model.

DOE No: 0352 DOE Coord: J. AELLEN

Title: A Waterjet Mining Machine

Description: A waterjet mining machine which includes the roof support function. High pressure jets delineate blocks of coal which are subsequently broken loose by hydraulically driven wedges.

Inventor: David A Summers
State : MOContact:
Ray E Snyder
Tower Center
200 East Evergreen
Mount Prospect IL 60056
312-398-1525

Status: Award Status Date: 04/27/87 OERI No.: 011173

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Fossil FuelsRecv by NBS : 10/04/85
Recom. by NBS : 04/22/86
Award Date : 04/27/87 Award Amount: \$ 76,040 Grant No: FG01-87CE15307
Contract Period: 04/27/87 - 01/08/89

Summary: A \$76,040 grant was awarded on July 27th, 1987, to build and test an advanced prototype.

DOE No: 0357 DOE Coord: P. M. HAYES

Title: TUBEXPRESS Pneumatic Capsule Pipeline Transport System

Description: A pneumatic materials handling system using capsules to carry bulk materials through a tubular line.

Inventor: William Vandersteel Contact:
State : NJ William Vandersteel
 Tubexpress Systems, Inc.
 One Marine Plaza
 North Bergen NJ 07047
 201-868-2000

Status: Complete Status Date: 02/02/87 OERI No.: 011285

Patent Status : Patent # - 4458602 and others
Development Stage : Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 12/06/85
Recom. by NBS : 07/09/86
Award Date : 02/02/87 Award Amount: \$ 70,000 Grant No: FG01-87CE15311
Contract Period: 02/02/87 - 05/01/88

Summary: A grant of \$70,000 was awarded on February second, 1987, to determine the capsule wheel/alignment configuration necessary to achieve spiraling stability in a thirty-six inch diameter system. Project objectives were successfully met. TubeExpress Systems, Inc., is negotiating with several private sector companies for commercial application of the technology.

DOE No: 0358 DOE Coord: J. AELLEN

Title: Device for Well Site Monitoring and Control of Rod- Pumped Wells

Description: A device for monitoring and controlling the pumping rate of rod-pumped wells for maintaining maximum well production rate.

Inventor: John C Purcupile Contact:
State : OK Glenn Albert

Status: Decision Phase Status Date: 08/14/87 OERI No.: 011010

Patent Status : Patent Applied For
Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv by NBS : 07/29/85
Recom. by NBS : 07/15/86

Summary: Recommendation under consideration by DOE.

DOE No: 0363

DOE Coord: P. M. HAYES

Title: Impactor Separator

Description: A device for removing particulates from diesel engine exhaust, which consists of an impingement system for capturing particles and a system for collecting and burning these captured particles.

Inventor: Leonard R Lefkowitz
State : NY

Contact:
Leonard R Lefkowitz
Fourteen Alpine Drive
Latham NY 12110
518-785-8232

Status: Award

Status Date: 04/04/87

OERI No.: 010426

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 10/02/84

Recom. by NBS : 08/14/86

Award Date : 04/04/87 Award Amount: \$ 70,000 Grant No: FG01-87CE15327

Contract Period: 04/04/87 - 10/15/88

Summary: A grant of \$70,000 was awarded on April 4, 1987, to design, build and test a workable prototype of the regenerative diesel filter invention.

DOE No: 0364

DOE Coord: J. AELLEN

Title: Intermittant Solar Ammonia Absorption Cycle (ISAAC)

Description: An intermittant solar-powered ammonia/water absorption cycle to make ice.

Inventor: Donald C Erickson
State : MD

Contact:
Donald C Erickson
627 Ridgely Avenue
Annapolis MD 21401
301-266-6521

Status: Award

Status Date: 04/23/87

OERI No.: 011112

Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Industrial Processes

Recv by NBS : 08/26/85

Recom. by NBS : 08/20/86

Award Date : 04/23/87 Award Amount: \$ 69,400 Grant No: FG01-87CE15325

Contract Period: 04/23/87 - 10/22/88

Summary: A \$69,400 grant was awarded on April 23d, 1987, to build and test a model in Micronesia.

DOE No: 0367

DOE Coord: G. K. ELLIS

Title: Disintegration of Wood

Description: A high pressure water jet for producing wood pulp.

Inventor: Marian Mazurkiewicz
State : MOContact:
Terry Nixon
Incubator Technology
Route Four, Box #519
Rolla MO 65401
314-364-8570

Status: Award

Status Date: 05/19/88

OERI No.: 010668

Patent Status : Patent Applied For
Development Stage : Concept Development
Technical Category: Industrial Processes

Recv by NBS : 02/28/85

Recom. by NBS : 08/27/86

Award Date : 05/19/88

Contract Period: 05/19/88 - 11/18/89

Award Amount: \$ 67,795 Grant No: FG01-88CE15367

Summary: A grant for \$67,795 was awarded on May 19, 1988.

DOE No: 0368

DOE Coord: T. LEVINSON

Title: Aircraft Minimum Drag Speed System

Description: A system for determinimng the minimum drag speed of an aircraft in loitering flight.

Inventor: Paul Michelotti
State : CTContact:
Paul Michelotti

Status: Analysis

Status Date: 09/22/86

OERI No.: 010888

Patent Status : Patent # - 4445179

Development Stage : Prototype Development

Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/04/85

Recom. by NBS : 09/19/86

Summary: Recommendation under consideration by DOE which awaiting action by the inventor.

DOE No: 0383

DOE Coord: G. K. ELLIS

Title: Electro-Optic Inspection of Heat Exchangers

Description: A laser based system to inspect heat exchanger tubing for internal corrosion, erosion, scale buildup and deformation. An articulated probe is capable of negotiating and rapidly inspecting straight and bent tubing. The results are acquired, stored and displayed on a portable computer system with graphics capability.

Inventor: James L Doyle, Jr.
State : WA

Contact:
James L Doyle, Jr.
Flow Industries
21414 68th Avenue, South
Kent WA 98032
206-872-8500

Status: Award

Status Date: 04/09/87

OERI No.: 011086

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Miscellaneous

Recv by NBS : 08/19/85

Recom. by NBS : 12/17/86

Award Date : 04/09/87 Award Amount: \$ 63,502 Grant No: FG01-87CE15328

Contract Period: 04/09/87 - 10/08/88

Summary: A grant of \$63,502 was awarded on April 9th, 1987, to build and test an advanced prototype.

DOE No: 0384

DOE Coord: J. AELLEN

Title: Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity

Description: A process and Hardware for continuously casting thin strip steel

Inventor: Thomas Gasper
State : OH

Contact:
Lloyd E Hackman
Ribbon Technology Corporation
Box #30758
Gahanna OH 43230
800-848-0477

Status: Award

Status Date: 06/14/88

OERI No.: 011829

Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 08/15/86

Recom. by NBS : 01/21/87

Award Date : 06/14/88 Award Amount: \$ 76,444 Grant No: FG01-88CE15384

Contract Period: 06/14/88 - 12/13/89

Summary: A grant of \$49,444 was awarded by ERIP on June 14th, 1988. This was supplimented by a \$27,000 grant from the Office of Industrial Programs.

DOE No: 0387

DOE Coord: J. AELLEN

Title: Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle

Description: A small internal combustion engine operating on a cycle which achieves essentially maximum expansion of combustion gases before they are exhausted to the atmosphere. The engine is flexible with respect to the fuel and ignition means used, and can be constructed in several different embodiments to meet different applications. It is quiet, efficient and seems particularly suitable for powering devices such as chain saws, lawn mowers and the like.

Inventor: Frederick L Erickson
State : IN

Contact:
George S Lewis
3926 Windswept Drive
Fort Wayne IN 46815
219-483-2093

Status: Award

Status Date: 06/14/88

OERI No.: 005848

Patent Status : Patent # - 4437437 and others
Development Stage : Prototype Test
Technical Category: Combustion Engines & Components

Recv by NBS : 09/25/79
Recom. by NBS : 02/02/87
Award Date : 06/14/88 Award Amount: \$ 63,485 Grant No: FG01-88CE15387
Contract Period: 06/14/88 - 12/13/89

Summary: A grant of \$63,485 was awarded on June 14th, 1988.

DOE No: 0388

DOE Coord: J. AELLEN

Title: Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts

Description: A chemical coprecipitation method for preparing superalloy powders of less than one micron size, of uniform size, intimately mixed, and without contaminants.

Inventor: Ram Natesh
State : UT

Contact:
Gordon F Jensen

Status: Analysis

Status Date: 02/17/87

OERI No.: 010480

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 11/14/84
Recom. by NBS : 02/12/87

Summary: Recommendation under consideration by DOE.

DOE No: 0391 DOE Coord: A. R. BARNES

Title: Compressed Gas Energy Storage

Description: The invention is an energy storage system in a leak-proof salt or granite cavern. In the energy storage mode, a reversible pump-turbine (RPT) unit pumps fluid into the cavern base to compress a mass of gas above it. In the power generation mode, the fluid expands through the RPT unit driving an electric generator to generate electricity during peak power demand.

Inventor: Gerald J Grott
State : AZ

Contact:
Gerald J Grott

Status: Analysis Status Date: 03/23/87 OERI No.: 011778

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Miscellaneous

Recv by NBS : 05/28/86
Recom. by NBS : 03/20/87

Summary: No proposal submitted.

DOE No: 0392 DOE Coord: T. LEVINSON

Title: Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore

Description: A method and apparatus for linking underground wells up to several hundred feet apart, for in situ coal gasification.

Inventor: David A Summers
State : MO

Contact:
Terry Nixon

Status: Analysis Status Date: 03/30/87 OERI No.: 010708

Patent Status : Patent # - 4317492
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv by NBS : 03/05/85
Recom. by NBS : 03/26/87

Summary: Recommendation under consideration by DOE. Awaiting statement of work from inventor.

DOE No: 0393

DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Ultrasonic Testing of Tubular Goods

Description: A method to inspect tubing or pipes for flaws.

Inventor: Waylon A Livingston
State : OKContact:
Waylon A Livingston
Tubesonics International, Inc
770 West Rock Creek Road
Norman OK 73069
405-364-9710

Status: Procurement

Status Date: 08/27/87

OERI No.: 011286

Patent Status : Patent # - 4541064 and others
Development Stage : Limited Production/Marketing
Technical Category: Miscellaneous

Recv by NBS : 12/09/85

Recom. by NBS : 04/10/87

Award Date : 08/27/87

Contract Period: 08/27/87 - 02/26/89

Award Amount: \$ 94,721 Grant No: FG01-87CE15345

Summary: An grant of \$94,721 was awarded on August 27th, 1987, including \$19,721 from DOE/Fossil Energy, to build and test a prototype.

DOE No: 0394

DOE Coord: J. AELLEN

Title: Variable Wall Mining Machine

Description: A longwall coal mining machine having a series of side cutting auger sections connected by universal joints. Nitrogen or other inexpensive inert gas is introduced into the shrouded cutting chamber, to control release of methane from the coal seam, and production of dust by the cutting machine.

Inventor: Jay Hilary Kelley
State : PAContact:
Jay Hilary Kelley

Status: Analysis

Status Date: 04/20/87

OERI No.: 011464

Patent Status : Patent # - 4118072
Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NBS : 02/27/86

Recom. by NBS : 04/16/87

Summary: Recommendation under consideration by DOE.

DOE No: 0397 DOE Coord: P. M. HAYES
Title: In Service Tank Bottom Leak Detection and Repair System
Description: A method for detecting and repairing leaks in large storage tanks, particularly those used for storage of petroleum products.

Inventor: Donald E Lewis Contact:
State : OK Donald E Lewis

Status: Analysis Status Date: 04/12/88 OERI No.: 011780
Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv by NBS : 07/18/86
Recom. by NBS : 05/29/87

Summary: Request for financial support is under consideration.

DOE No: 0398 DOE Coord: A. R. BARNES
Title: Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
Description: A portable air operated test system, including special tube plugs for high pressure testing of tubes in shell and tube heat exchangers and the like, in power plants or any other process industry.

Inventor: Renato R Noe Contact:
State : NJ Mary Jane Luddy

Status: Analysis Status Date: 06/01/87 OERI No.: 011782
Patent Status : Patent # - 4474216
Development Stage : Production & Marketing
Technical Category: Miscellaneous

Recv by NBS : 07/21/86
Recom. by NBS : 05/29/87

Summary: Recommendation under consideration by DOE. Product is in limited production.

DOE No: 0407

DOE Coord: A. R. BARNES

Title: An Extended Range Tankless Water Heater

Description: An extended range tankless water heater with a peak capacity of roughly 185,000 BTU/hr, designed to operate with uniform efficiency from very low water flowrates to the peak design flowrate. The burner does not activate until a minimum flowrate (about 0.5 gal/min) is reached. The design also has the potential for low manufacturing cost, which can make it competitive with tank-type heaters.

Inventor: James R Harris
State : KSContact:
James R Harris

Status: Analysis

Status Date: 04/12/88

OERI No.: 011882

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Buildings, Structures & ComponentsRecv by NBS : 10/03/86
Recom. by NBS : 09/25/87

Summary: Grant request under consideration for building and testing of a prototype.

DOE No: 0408

DOE Coord: P. M. HAYES

Title: Floodshield System

Description: A flood protection device for commercial and residential structures. It consists of a durable and storable PVC shield which is pulled up and snapped into place when flood waters threaten. A filtered, perforated drain pipe is buried around the base of the structure and is connected to an industrial grade pump which collects and discharges underground seepage.

Inventor: William W Thompson
State : WIContact:
William W Thompson

Status: Procurement

Status Date: 04/07/88

OERI No.: 011757

Patent Status : Patent # - 4488386
Development Stage : Production & Marketing
Technical Category: MiscellaneousRecv by NBS : 07/07/86
Recom. by NBS : 09/29/87

Summary: Request for financial support under consideration.

DOE No: 0419

DOE Coord: J. AELLEN

Title: A Planing Machine to Produce Ultra-Fine Coal

Description: A water jet based coal mining system to separate out impurities as the coal is being mined. The system also permits cutting square holes, increasing recoverable reserves. The system would be primarily for mining presently unusable high ash and similar coal fields that are uneconomical to mine.

Inventor: Marion Mazurkiewicz
State : MO

Contact:
Bob Johnson

Status: Analysis

Status Date: 01/29/88

OERI No.: 010687

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Industrial Processes

Recv by NBS : 02/28/85

Recom. by NBS : 01/29/88

Summary: Recommendation under consideration by DOE.

DOE No: 0420

DOE Coord: A. R. BARNES

Title: The Utah Transmission/Continuously Variable Speed Wind Generator

Description: A continuously variable transmission utilizing a variable cam drive with power transmitted through one of a series of overrunning clutches.

Inventor: Laird B Gogins
State : UT

Contact:
Laird B Gogins

Status: Analysis

Status Date: 01/29/88

OERI No.: 011820

Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 08/11/86

Recom. by NBS : 01/29/88

Summary: Grant proposal under consideration.

DOE No: 0427 DOE Coord: J. AELLEN
Title: Non-Catalytic Steam Hydrolysis of Fats
Description: A non-catalytic process for steam hydrolyzing fats and recovering
 the separated products thus formed.
Inventor: Kenneth E Lunde Contact:
State : MT Kenneth E Lunde
Status: Analysis Status Date: 03/31/88 OERI No.: 011098
Patent Status : Patent Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes
Recv by NBS : 08/22/85
Recom. by NBS : 03/31/88
Summary: Recommendation under consideration by DOE.

DOE No: 0428 DOE Coord: G. K. ELLIS
Title: Uni-Frac Column and T-By Tray
Description: The invention is a new column and tray design for distillation
 columns.
Inventor: Trent J Parker Contact:
State : UT Trent J Parker
Status: Analysis Status Date: 04/22/88 OERI No.: 012275
Patent Status : Patent Applied For
Development Stage : Working Model
Technical Category: Industrial Processes
Recv by NBS : 06/30/87
Recom. by NBS : 04/22/88
Summary: Statement of work received. A procurement for \$79,110 was
 initiated to perform a detailed circuit design, build a
 prototype, and test an operating turbo machine.

DOE No: 0431

DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Removing Excess Water from Subterranean Wells.

Description: A method by which separation of water from hydrocarbons produced in wells is effected within the wellbore through the action of gravity. As the mixture of hydrocarbons and water enters the well, the water settles to the bottom. Either a pump or just the action of gravity head injects the water in a rock formation. The Hydrocarbons are brought to the surface with or without the help of artificial lift, as in conventional wells.

Inventor: Jack Wade McIntyre
State : TX

Contact:
Jack Wade McIntyre

Status: Analysis

Status Date: 05/31/88

OERI No.: 012367

Patent Status : Patent Applied For
Development Stage : Concept Definition
Technical Category: Fossil Fuels

Recv by NBS : 09/01/87
Recom. by NBS : 05/31/88

Summary: Recommendation under consideration by DOE. Awaiting statement of work.

DOE No: 0432

DOE Coord: L. A. LEE

Title: Water Hammer Pile Driver

Description: A pile driver, intended for offshore use, in which a water hammer tube is evacuated and the ambient pressure provided by the surrounding sea water is used to generate the driving impulse which increases with depth.

Inventor: Serge Wisotsky
State : OK

Contact:
Serge Wisotsky

Status: Analysis

Status Date: 05/31/88

OERI No.: 010416

Patent Status : Patent # - 3922869 and others
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv by NBS : 09/25/84
Recom. by NBS : 05/31/88

Summary: Recommendation under consideration by DOE.

DOE No: 0435

DOE Coord: L. A. LEE

Title: A New Thermodynamic Process of Actual Approach to the Carnot Cycle

Description: A heat engine cycle using two or more working fluids with different boiling points. Generally, mixtures of the fluids are vaporized and expanded through a turbine. The liquid turbine exhaust is used to pre-heat and vaporize some of the condensed phases. The remaining vapor is expanded through an additional stage to maximize efficiency.

Inventor: Serafin L Mendoza
Country : Spain

Contact:
Serafin L Mendoza

Status: Analysis

Status Date: 06/30/88

OERI No.: 009915

Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Combustion Engines & Components

Recv by NBS : 01/03/84
Recom. by NBS : 06/30/88

Summary: Recommendation under consideration by DOE.
y

DOE No: 0436

DOE Coord: G. K. ELLIS

Title: The Russell Self-Piloted Check Valve

Description: A check valve which embodies a conventional flapper valve and an eccentric ball valve. In the open position, the flow is unimpeded in a certain direction. When the flow reverses, the spring-loaded flapper valve within the ball closes. It then causes the ball valve to close against a restraining spring pressure. When the fluid pressure is released, the restraining spring opens the ball valves while the opposing flow opens the flapper.

Inventor: Joe Sanford
State : LA

Contact:
Joe Sanford

Status: Analysis

Status Date: 07/07/88

OERI No.: 012103

Patent Status : Patent # - 4254836 and others
Development Stage : Prototype Test
Technical Category: Buildings, Structures & Components

Recv by NBS : 03/06/87
Recom. by NBS : 07/07/88

Summary: Recommendation under consideration be DOE. Awaiting statement of work.

DOE No: 0437

DOE Coord: L. A. LEE

Title: Steam Generator With Integral Down-Draft Dryer

Description: The invention is a method for improving the operation of a steam generating furnace fired with high moisture content wood fuels. It consists of a drying shaft installed inside the furnace. The fuel is dried by bringing it in turbulent contact with hot combustion gases. Dryer fuel requires less excess air for stable combustion; also, the need for fuel to stabilize combustion is obviated.

Inventor: Frank W Hochmuth
State : ME

Contact:
Frank W Hochmuth

Status: Analysis

Status Date: 07/20/88

OERI No.: 011408

Patent Status : Patent # - 4502397 and others
Development Stage : Engineering Design
Technical Category: Buildings, Structures & Components

Recv by NBS : 01/28/86
Recom. by NBS : 07/20/88

Summary: Recommendation under consideration by DOE.

DOE No: 0438

DOE Coord: J. AELLEN

Title: Microwave Reflection by Synthetic Metals

Description: A series of synthetic materials that reflect microwaves.

Inventor: M Thomas Jones
State : MO

Contact:
Robert Killoren

Status: Analysis

Status Date: 07/29/88

OERI No.: 012353

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Industrial Processes

Recv by NBS : 08/27/87
Recom. by NBS : 07/29/88

Summary: Recommendation under consideration by DOE.

DOE No: 0439

DOE Coord: L. A. LEE

Title: Project Twenty-One Rapid Transit System

Description: A rapid transit system optimized for placement above existing urban streets. Its outstanding features are two-way traffic along a super-slender beam, compact stations, and convenient switching for two-way traffic.

Inventor: Lawrence K Edwards
State : VAContact:
Lawrence K Edwards

Status: Analysis

Status Date: 08/02/88

OERI No.: 012388

Patent Status : Patent # - 4485967 and others

Development Stage : Engineering Design

Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 12/17/85

Recom. by NBS : 08/02/88

Summary: Recommendation under consideration by DOE.

DOE No: 0440

DOE Coord: L. A. LEE

Title: Microtube Strip Heat Exchanger

Description: A high efficiency heat exchanger is described which is suitable for improving the efficiency of closed Brayton cycles as well as a number of other applications. The heat exchanger relies on laminar flow for the convective heat transfer. Manufacturing of the heat exchanger is also discussed.

Inventor: F David Doty
State : SCContact:
F David Doty

Status: Analysis

Status Date: 08/05/88

OERI No.: 012615

Patent Status : Patent # - 4676305

Development Stage : Prototype Development

Technical Category: Combustion Engines & Components

Recv by NBS : 04/07/88

Recom. by NBS : 08/05/88

Summary: Recommendation under consideration by DOE.

DOE No: 0441 DOE Coord: L. A. LEE

Title: Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby

Description: A formulation and application method to prevent biofouling of ships hulls, offshore drilling platforms, and similar types of under-ocean structures.

Inventor: Alexander Bosna
State : PA

Contact:
Alexander Bosna

Status: Analysis Status Date: 09/26/88 OERI No.: 124646

Patent Status : Patent # - 4618504 and others
Development Stage : Production Engineering
Technical Category: Industrial Processes

Recv by NBS : 11/12/87
Recom. by NBS : 09/26/88

Summary: Recommendation under consideration by DOE.

DOE No: 0442 DOE Coord: G. K. ELLIS

Title: Long Life "PC" Drill Bit

Description: A modified drag bit to drill for gas and oil.

Inventor: Richard C Raney
State : TX

Contact:
Richard C Raney

Status: Analysis Status Date: 09/28/88 OERI No.: 010791

Patent Status : Disclosure Document Program
Development Stage : Prototype Development
Technical Category: Fossil Fuels

Recv by NBS : 04/26/85
Recom. by NBS : 09/28/88

Summary: Recommendation under consideration by DOE.

DOE No: 0443

DOE Coord: J. AELLEN

Title: A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization

Description: The invention concerns the use of cerium oxide as a hot gas desulfurization sorbent. The creation of oxygen ion vacancies in the cerium oxide crystal matrix makes it feasible to absorb sulfur from hot product gases coming from a coal gasifier.

Inventor: William G Wilson
State : PA

Contact:
William G Wilson

Status: Analysis

Status Date: 09/29/88

OERI No.: 012336

Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv by NBS : 08/17/87

Recom. by NBS : 09/29/88

Summary: Recommendation under consideration by DOE.

DOE No: 0444

DOE Coord: L. A. LEE

Title: Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid

Description: A technique is proposed for measuring the water content of oil in transmission and in transportation. The scheme uses microwaves and the spectral differences between Water and Crude Oil to determine the volume fraction of water in the oil.

Inventor: Claude V Swanson
State : VA

Contact:
Claude V Swanson

Status: Analysis

Status Date: 09/30/88

OERI No.: 012478

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Miscellaneous

Recv by NBS : 12/02/87

Recom. by NBS : 09/30/88

Summary: Recommendation under consideration by DOE.

SECTION 4 RECOMMENDED INVENTIONS CROSS REFERENCE LISTS

4.0 Introduction

This section provides three tables for use in locating specific recommended inventions. Table 4-1 is ordered by inventor name and contains the inventor name, DOE number, and invention title. Table 4-2 is ordered by contact name and contains the contact name, DOE number and invention title. Table 4-3 is ordered by invention classification and lists the DOE number, inventor name, and titles associated with each invention classification. A list of the invention classifications is provided in Appendix A.

Table 4-1

RECOMMENDED INVENTIONS BY INVENTOR NAME

Inventor Name	DOE No.	Invention Title
John W Ackley, III	0306	An Efficiency Computer for Heated or Air Conditioned Buildings
Den M Acres	0175	A Low-Energy Carpet Backing System
Joe Agar	0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
Warren A Aikins	0356	Portable Automatic Firewood Processor
Jerry Aleksandrow	0290	Low Energy Ice Making Apparatus
Ray Alexander	0347	Oxide Dispersion Strengthened Aluminum Alloys
Joseph Allegro	0379	Inner Roof Solar System
Henry E Allen	0089	Continuous Casting Process and Apparatus
James E Altman	0378	An Improved Cutter for Plaster Board and the Like
Floyd R Anderson	0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
Frank L Anderson	0207	Glass Sheet Manufacturing Method and Apparatus
William F Armitage, Jr.	0041	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
Robert M Arthur	0047	Waste water Aeration Power Control Device
Eldon L Asher	0119	Air Ratio Controller (AERTROL)
Tom Atterbury	0283	Aluminum Roofing Chips
George C Austin	0005	Diesel Engine Conversion System for Gasoline Engines
Don E Avery	0275	Low Head - High Volume Pump
Don E Avery	0301	Pump Control System for Windmills
Richard J Avery, Junior	0269	Refrigerant Accumulator and Charging Apparatus
Richard H Baasch	0257	Method and Apparatus for Melting Snow
James Allen Bagby	0091	Mine Brattice
Frank W Bailey	0125	The Turbulator Burner System
Randell D Ball	0293	"Therm-A-Valve" - Insulated Valve Coverings
Stanley D Balzer	0402	KTM Logger
Edward L Barrett	0195	Proportional Current Battery
Erwin O Beck	0369	"Fire Jet" Automatic Anthracite Burner
Karakian Bedrosian	0171	A Method of Preserving Fruits and Vegetables without Refrigeration
Richard B Bentley	0051	Thermal Efficiency Construction
Karl H. Bergey	0110	Improved Wind power Generating System
Frank C Bernhard	0102	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Inventor Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
Val O Bertoa	0095	Omni-Horizontal Axis-Wind Turbine
Charles James Bier	0083	Vertical Solar Louvers
Lawrence E Bissell	0037	Hot water Engine
Leroy M Bissett	0068	Under Compression and Over Compression Free Helical Screw Rotary Compressor
Wayne S Boals	0049	Automatic Control System for Water Heaters
Ranendra K Bose	0013	Anti-Pollution System
Alexander Bosna	0441	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby
William P Boulet	0056	Flexaflo-The Wet Fuel Dryer
Harold L Bowman	0305	Automatic Filter Network Protection, Failure Detection and Correction System and Method
Paul E Bracegirdle	0261	A New Apparatus for Making Asphalt Concrete
Ronald E Brandon	0236	Steam Turbine Packing Ring
John A Broadbent	0355	Energy-Efficient Ice Cube Making Machine
Wayne S Brown	0418	Use of Chemical Vapor Deposition to Coat Metal Surfaces with High Temperature Superconducting Materials
James A Browning	0067	Windmill Using Hydraulic System for Energy Transfer and Speed Control
John W Bruce	0016	Method and Apparatus for Vacuum Drying of Commodities
John H Burk	0302	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
Bill Burley	0173	Thermal Ice Cap
Robert Cameron	0050	Scotsman Fuel Energizer
Patsie C Campana	0080	Improved Unfired Refractory Brick
Vincent E Carman	0008	Inertial Storage Transmission
John L Carroll	0092	Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
Marc S Caspe	0289	An Earthquake Barrier
Robert A Caughey	0032	Wood Gas Reactor
Forrest E Chancellor	0154	Rotating Horsehead for Pumping Units
Shih-Chih Chang	0270	Method of Energy Recovery for Waste water Treatment
Wu-Chi Chen	0165	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen
Kai-Chih Cheng	0262	Energy Saving Pump and Pumping System
Shang-I Cheng	0267	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge
Shang-I Cheng	0320	Coal Gasification with Carbon Dioxide and Lime Recycling
James L Chill	0098	Process Development to Conserve Energy and Material - --(in the manufacture of)---Bearings
Deborah D Chung	0304	Exfoliated Graphite Fibers
George B Clark	0316	Thrust Impact Rock Splitter

Inventor Name	DOE No.	Invention Title
Robert A Clay	0143	Oil Well Pump Jack
James M Cleary	0155	Slip Mining
Nathan Cohn	0247	Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems
William H Cone	0060	Electric Transport Refrigerator
Edward B Connors	0167	Vaned Pipe for Pipeline Transport of Solids
Paul J Cromwell	0108	Processing Recovery of Aluminum
Albert B Csonka	0006	Micro-Carburetor
Julius Czaja	0273	Open Cycle Latent Heat Engine
Richard E Dame	0180	Adjustable Solar Concentrator (ASC)
Sharad M Dave	0101	Controlled Combustion Engine
Guy C Dempsey	0277	Electronic Conveyor Control Apparatus
Norman L Dickinson	0288	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
Gilbert W Didion	0028	Ultraflo
Lawrence A Dobson	0425	High Temperature Condensing Biomass Combustion System
Oscar Leonard Doellner	0194	Radiant Energy Power Source for Jet Aircraft
James J Dolan	0156	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
Richard Lee Dominquez	0334	So-Luminaire Natural Daylighting Unit
Todd M Doscher	0415	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensable Gas
F David Doty	0440	Microtube Strip Heat Exchanger
Daniel Douenias	0254	"Turbo-Glo" Immersion Furnace
David W Doyle	0017	Osmotic-Hydro Power Generation
James L Doyle, Jr.	0383	Electro-Optic Inspection of Heat Exchangers
Gary L Drake	0342	Raw Fines Medium Coal Washing System
W B Driver	0421	Flexible Drill Pipe
Harold P Dugas	0430	Whitten Dugas Mud Pump Enhancer
Anthony A duPont	0161	duPont Connell Energy Coal Gasification Process
Enoch J Durbin	0069	Ionic Fuel Control System for the Internal Combustion Engine
Leonard A Duval	0148	Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes
Herbert D Easterly	0311	Auxiliary Truck Heater
John A Eastin	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
Gerald Eastman	0189	Pump Jack
Edwin E Eckberg	0103	Low Voltage Ionic Fluorescent Light Bulb
Charles E Edwards	0179	Development and Commercialization of Low Cost, Non-Metallic, Solar Systems
Lawrence K Edwards	0439	Project Twenty-One Rapid Transit System
Thomas C Edwards	0225	ROVAC High Efficiency Low Pressure Air Conditioning System
Dan Egosi	0266	Energy Conversion Method

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Raymond A Elam	0403	Enterprise Lubricator
Guy R B Elliott	0231	Natural Gas from Deep-Brine Solutions
Hal Ellis	0034	Delphic Thermogenic Paint (Heat Film)
Donald C Erickson	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
Donald C Erickson	0025	Sulfur Removal from Producer Gas-High Temperature
Donald C Erickson	0230	Absorption Heat Pump Augmented Separation Process
Donald C Erickson	0364	Intermittent Solar Ammonia Absorption Cycle (ISAAC)
Donald C Erickson	0404	Steam-Methane Reforming in Molten Carbonate Salt
Frederick L Erickson	0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
Hermann Ernst	0285	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
Ruben Espinosa	0396	Dyna Flow
Robert F Evans	0166	Borehole Angle Control
Robert F Evans	0182	Improved Seal for Geothermal Drill Bit
Robert F Evans	0211	Shock Mounted Stratapax Bit
Norman C Fawley	0208	CNG Automotive Fuel Cylinders/Gas Transport Modules
Norman C Fawley	0227	GRM Pipe
Michael Feygin	0333	Laser Based Machine for Die and Prototype Manufacturing
Kenneth V Field	0353	Compu-Turbo-Aligner
Marshall Findley	0340	Separation of Adsorbed Components by Variable Temperature Desorption
John D. Finnegan	0176	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
William M FioRito	0094	Lantz Converter
Joseph C Firey	0331	Cyclic Char Combustion for Engines, Boilers and Gasifiers
G R Fitterer	0018	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
G R Fitterer	0074	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
Lloyd Flatland	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
Willing B Foulke	0061	Fuel Preparation Process
Joe W Fowler	0045	Bulk Cure Tobacco Barn with Improvements
Thomas F Francovitch	0292	Roof Construction Having Membrane and Photo Cells
Anthony N Fresco	0284	Atomized Oil-Injected Rotary Screw Compressors

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Linus C Fuchek	0372	FS 630 Heat Pump Thermostat Control
Harald F Funk	0405	Prehydrolysis and Digestion of Plant Material
Jonathan Gabel	0206	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
David Ganoung	0411	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency
Juan M Garcia, Junior	0246	Maximum Cruise Performance
Gene Garrett	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
John D Garrison	0336	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
Thomas Gasper	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
Richard J Gay	0241	Polysulfide Oil Field Corrosion Control System
Philip H Gifford II	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
John D Gill	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
Richard P Gingras	0036	Computerstat
Laird B Gogins	0420	The Utah Transmission/Continuously Variable Speed Wind Generator
Nathan Gold	0184	Coasting Fuel Shutoff
Meredith C Gourdine	0228	EGD Fog Dispersal System
Louis E Govear	0212	Water Warden
William D Gramling	0159	Non-Tubing Type Lift Device, Described as the NTT Rabbit
Thorvald G Granryd	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
Willard Graves	0001	Demand Metering System for Electric Energy
Evert S Green	0256	Method and Apparatus for Irrigating Container Grown Plants
Gerald J Grott	0391	Compressed Gas Energy Storage
Jack D Haile	0224	Haile Alternate Fuel Grain Dryer
Ogden H Hammond	0149	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
James R Harris	0407	An Extended Range Tankless Water Heater
Harold A Hartung	0385	Process for Treating Humus Materials
John C Haspert	0111	Haspert Mining System
John C Haspert	0188	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
Walter J Hasselman, Jr	0019	Phenol Methylene Foam Rigid Board Insulation
Louis A Hausknecht	0201	Hydraulic, Variable, Engine Valve Actuation System

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Inventor Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
Spencer Kim Haws	0168	The Hot Water Saver
August G Hebel, Junior	0412	Meta-Lax Stress Relief for Almost any Size Metal Structure
Wanda Henke	0350	Method and Apparatus for Testing Soil
Lee A Henningsen	0065	WattVendor
Ben B Herschel	0434	Modular Apparatus for Laundry Dryer Heat Recovery
David E Hicks	0237	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles
Frank W Hochmuth	0437	Steam Generator With Integral Down-Draft Dryer
John H Holland	0395	Holland Oil Well Pumping System
Raymond P Holland Jr	0204	The Induction Propeller
Thomas P Hopper	0020	Thermal Shade
Vladimir Horak	0361	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations
Werner E Howald	0048	Howald Combustor
Dennis D Howard	0163	Thermotropic Plastic Films
John Hunter	0199	Rotary Coal Combustor and Heat Exchangers
Raymond Hunter	0296	Shower Bath Economizer
Robert M Hunter	0310	Portable Wastewater Flow Metering Device
Russell D Ide	0399	Hydrodynamic/Multi Deflection Pad Bearing
Int'l MGD Companies	0023	Microgas Dispersions
Rudolf O Iverson	0221	Strainer cycle
Richard Jablin	0075	Coke Quenching Steam Generator
Richard Jablin	0215	Slag Waste Heat Boiler
Gulab Chand Jain	0035	Utilization of Solar Energy by Solar Pond System
Charles B James	0205	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
Seymour Jarmul	0026	Compact Energy Reservoir
Morris R Jeppson	0203	Microwave Methods and Apparatus for Paving and Paving Maintenance
William Martin Johnson	0351	Flash Gate Board
M Thomas Jones	0438	Microwave Reflection by Synthetic Metals
R J Jones	0027	Waste Heat Utilization for Commercial Cooking Equipment
Ray L Jones	0312	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
William A Jones	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
Louis A Joo	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
Edgar R Jordon	0131	Valve Deactuator for Internal Combustion Engines
Charles G Kalt	0085	Dielectric Windowshade

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Robert F Karlicek	0197	Frequency Regulator and Protective Devices for Synchronous Generators
Eskil L Karlson	0104	Low Continuous Energy Mass Separation System
Eskil L Karlson	0181	The Karlson Ozone Sterilizer
Eskil L Karlson	0346	Ultra-Pure Water System for Hospitals
Eskil L Karlson	0422	High Efficiency Ozone Generating System
Clyde F Kaunitz	0213	The Kaunitz Process for Welding Pipe
Henry Keep, Junior	0147	Railroad Switch Heater
Jay Hilary Kelley	0394	Variable Wall Mining Machine
H. W. Kennick	0109	Hydrostatic Meat Tenderizer
James E Kessler	0129	Super U System - Snap Strap
M Hossein Khorsand	0135	Point Focus Parabolic Solar Collector
Richard F Kiley	0216	Method and Assembly for Mounting a Semiconductor Element
Charles M Kirk	0058	A Multiple Spark System Using Inductive Storage
Max Klein	0314	Rolling Filter Apparatus
Peter Kneaskern	0410	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
Michael Knezevich	0132	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
Edward S Kress	0260	Method and Apparatus for Handling and Dry Quenching Coke
Kenneth R Kurple	0232	Method of Separating Lignin and Making Epoxide- Lignin
Robert G Landry	0052	Air Wedge
Lawrence W Langley	0426	Eddy Current Transducing System
James H Lawler	0039	Lawler Steam Generator and Lawler System of Thermal Oil Recovery
W N Lawless	0190	Oxygen-Conducting Material and Oxygen-Sensing Method
W N Lawless	0401	A Miniature, Inexpensive Oxygen-Sensing Element
Leon Lazare	0044	New Working Fluids for Increasing the Cycle Efficiencies of Thermal
Leon Lazare	0160	High Efficiency Absorption Refrigeration Cycle
Leon Lazare	0362	Improved Solvents for the Puraq Seawater Desalination Process
Leon Lazare	0377	A Novel Method of Producing Ice-Water Slurries
Maurice W Lee, Junior	0322	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
Leonard R Lefkowitz	0363	Impactor Separator
Herbert G Lehmann	0022	Fuel Burner Attachment
Ervin Leshner	0122	Lean Limit Controller
Donald C Lewis	0192	Closed Cycle Dehumidification Clothes Dryer

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Donald E Lewis	0397	In Service Tank Bottom Leak Detection and Repair System
Yao Tzu Li	0151	Film Type Storm Window
Yao Tzu Li	0202	Wobbling Type Distillation Apparatus
Ping-Wha Lin	0107	Waste Products Reclamation Process
Albert Lindqvist	0329	Modularized Pneumatic Tractor with Debris Liquifier
Waylon A Livingston	0393	Method and Apparatus for Ultrasonic Testing of Tubular Goods
Daniel A Lockie	0233	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
Thomas LoGiudice	0063	Fluorobulb
Harlan K Loveness	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
Kenneth E Lunde	0427	Non-Catalytic Steam Hydrolysis of Fats
William C Lyons	0338	Downhole Pneumatic Turbine Motor for Geothermal Energy
Douglas MacGregor	0086	Coke Desulfurization
Robert A Maciejczak	0335	Robotic Bridge Observation and Information System
Frank J Madison II	0313	Process Controller for Stripper Oil Well Pumping Units
Shalom Mahalla	0064	The Mahalla Process--A Hydrometallurgical Method for Extracting Copper
David S Majkrzak	0152	Vehicle Exhaust Gas Warm-up System
Momtaz N Mansour	0286	Use of Pulse-Jet for Atomization of Coal/Water Mixture
Alvin M Marks	0009	Heat/Electric Power Conversion via Charged Aerosols
Andrew W Marr, Junior	0280	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
Don J Marshall	0287	Automatic Variable Pitch Marine Propeller
Mervin W Martin	0169	MIRAFOUNT
Louis L Marton	0139	Transformer With Heat Dissipator
John Mattson	0117	"Solarspan" Prism Trap
W E Mattson	0140	Counter Flow Dual Tube Heat Exchanger
John H Mayo	0386	Device and Method to Enable Detection and Measurement of Deformities in Well Components
Kenneth E Mayo	0029	Tuned Sphere Stable Ocean Platforms
Marian Mazurkiewicz	0341	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials
Marian Mazurkiewicz	0367	Disintegration of Wood
Marion Mazurkiewicz	0419	A Planing Machine to Produce Ultra-Fine Coal
James McArthur	0300	Casing Stabbing Apparatus
John McCallum	0038	Reduction Volatilizations
James W McCord	0077	Variable Heat Refrigeration System
James W McCord	0097	Water Drying System

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
John A McDougal	0343	Electronic Octane
Jack Wade McIntyre	0431	Method and Apparatus for Removing Excess Water from Subterranean Wells.
Robert McNeill	0078	System for High Efficiency Power Generation from Low Temperature Sources
Albert L McQuillen, Jr	0157	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
Thomas R Mee	0170	Fog System - Low Energy Freeze Protection for Agriculture
Serafin L Mendoza	0435	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
Thomas M Meshbeshier	0219	Method for Making Acetaldehyde from Ethanol
Ralph A Messing	0315	Method of Processing Biodegradable Organic Material
Paul Michelotti	0368	Aircraft Minimum Drag Speed System
Anatol Michelson	0142	Process for Heatless Production of Hollow Items
Edward W Midlam	0150	The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
E. Stephen Miliaras	0183	Increased Vapor Generator Feature for a Reheat Vapor Generator
Everett Millard	0042	Flue Baffle Assembly
Renato Monzini	0114	New Energy-Saving Tire for Motor Vehicles
Drew W Morris	0024	Can and Bottle Crushing Apparatus
Ram Natesh	0388	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
E O Nathaniel	0174	Skate on Plastic Ice Skating System
Robert H Nealy	0198	The Thermatreat System
Edward A Griswold	0172	GEM Electrostatic Filtration System
Renato R Noe	0398	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
Robert S Norris	0021	Waste Oil Utilization System
John W North	0178	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
Kenneth W Odil	0084	Kinetic Energy Type Pumping System
Howard S Orr	0349	Three Roll Tension Stand
Jay E Ort	0235	Single Stage Anaerobic Digestion Process
Donald F Othmer	0264	Desulfurization of Coal
Rita Paleschuck	0002	Fuel Miser
Forrest M Palmer	0325	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
Richard D & Chester Palone	0055	Electrically Heated Sucker-Rod
C Richard Panico	0081	Flash Polymerization
Thaddeus Papis	0062	Tapered Plate Annular Matrix
Louis W Parker	0187	Variable Field Induction Motor
Sidney A Parker	0043	Thermal Gradient Utilization Cycle

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Thomas Neil Parker, Junior	0245	Improved Oil Well Pumping Unit
Trent J Parker	0428	Uni-Frac Column and T-By Tray
Nathan E Passman	0274	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
Carl E Pearl	0153	A New Equipment Design Concept for Storage of Hot Foods
J Paul Pemsler	0123	Comminution of Ores by a Low-Energy Process
J Paul Pemsler	0295	Improved Method of Electroplating Aluminum for Corrosion Resistance
Joe C Pendergrass	0371	Wallace Energy Systems Solar Assisted Heat Pump Water Heater
F J Perhats	0133	AUTOTHERM Car Comfort System
Leopold Pessel	0030	Method of Removing Sulfur Dioxide from Flue Gases
Anthony Peters	0253	High Performance Heat Pump
Deems M Pfaff	0344	Machine for Separating Concrete from Steel
Clyde G Phillips	0115	Refrigeration System
Sylvain J Pirson	0146	Line Integral Method of Magneto-Electric Exploration
Sylvain J Pirson	0186	Oil Recovery by In-Situ Exfoliation Drive
James W Platte	0359	Solid Fuel Hot Air Furnace
Lemuel Leslie Ply	0162	Tubular Pneumatic Conveyor Pipeline
Arnold R Post	0130	Furnace Input Capacity Trimming Switch
Milton Pravda	0191	Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
Bryan Prucher	0409	Self-Dressing Resistance Welding Electrode
Paul F Pugh	0158	Energy Conservative Electric Cable System
John C Purcupile	0358	Device for Well Site Monitoring and Control of Rod- Pumped Wells
B F Rabitsch	0327	Square Pattern Irrigation Sprinkler
Arthur Radichio	0416	Self-Contained Pipe Freezing Unit
Kenneth H Raihala	0365	Safety Stovepipe Damper Assembly
Anthony T Rallis	0258	Corrosion Protection Process for Bore Hole Tool
James L Ramer	0106	Deep Shaft Hydro-Electric Power
Richard C Raney	0442	Long Life "PC" Drill Bit
Dante A Raponi	0015	Estacron
Jay Read	0308	Binary Azeotropic, Hot Gas, Fat Extraction Process
Emil B Rechsteiner	0376	Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores
Douglas R Reich	0279	Method and Means for Preventing Frost Damage to Crops
William B Retallick	0271	Hydrogen Storage System
Albert S Richardson, Jr.	0136	Windamper
Albert S Richardson, Junior	0375	MDT Twister
Albert S Richardson, Junior	0429	A Low Cost Galloping Indicator

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
John W Richardson	0265	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
R L Risberg	0366	High Energy Semiconductor Switch
Charles E Robinson	0244	CHARLIE - Trademark - Federally Registered 1123957
Robert M Roeglin	0272	V-Plus System
Robert N Rose	0309	Process of Smelting with Submerged Burner
Donald R Ross	0076	The Ross Furnace
Robert F Roussey, Junior	0328	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
Jay R Royston	0240	All Steam Heated Sadiron for Commercial Use
John C Rupert	0134	Expanded Polystyrene Bead Insulation System
Alex Rutshein, et al	0088	System-100
Stewart Ryan	0226	An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings
Melvin H Sachs	0073	INTECH
Charlton Sadler	0124	Solar Collector
Robert E Salomon	0145	Solar Conversion by Concentration Cells with Hydrides
Robert E Salomon	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
Arthur D Sams	0281	Sun Synchronous Solar Powered Refrigerator
Nicholas Archer Sanders	0193	Engine Heating Device
Nicholas Archer Sanders	0303	Battery Heating Device
Joe Sanford	0436	The Russell Self-Piloted Check Valve
Bernard L Sater	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
Robert C Saunders, Junior	0144	SpaCirc Space Circulation Fan
Harold T Sawyer	0268	Apparatus for Enhancing Chemical Reactions
Karl D Scheffer	0126	Vaclaim
Lawrence A Schmid	0360	Temperature Controllable Heat Valve
Daniel J Schneider	0014	Aerodynamic Lift Translator
Charles A Schwartz	0220	Deep Throat Resistance Welder
Gerhard E Schwarz	0400	Continuous Casting and Inside Rolling of Hollow Rounds
Paul H Schweitzer	0054	Optimizer
Donald W Scott	0389	Reduced Size Heating Assembly for an Electric Stove
J D Seader	0127	Process and Apparatus to Produce Crude Oil from Tar Sands
J D Seader	0128	Continuous Distillation Apparatus and Method
Felix Sebba	0354	Preparation of Biliquid Foam Compositions
David J Secunda	0046	Thexon Dehydration
Gerald R Seeman	0138	Phantom Tube
David N Shaw	0374	Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines
Edward H Shelander	0093	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Samuel Shiber	0141	New Hydrostatic Transmission
Donald Shuler	0242	New Petersburg Beam Trawl
Roderick L Smith	0118	Energy Adaptive Control of Precision Grinding
Ronald H Smith	0011	Solar Collector
Joseph D Snitgen	0337	An Air Operated Hydraulic Power Unit
Edward J Sommer, Junior	0243	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
Roland P Soule	0040	Improved Equipment and Process for Production of Blue Water Gas
Henry Sperber	0380	Blow-In Blanket System
Norbert E Stainbrook	0330	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
Walter A Stark	0370	Dehumidification System for Indoor Pools and Other High Humidity Areas
Robert John Starr	0177	The Solar I Option
Brett Stern	0424	An Automated Process for Garment Manufacturers
Carl L Sterner	0294	Highway Power Patcher
James M Stewart	0278	Complete System for Large Solar Water Heating and Storage
Kenneth A Stofen	0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
Arthur F Stone	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
William P Strumbos	0381	Multiple Heat-Range Spark Plug
Frank R Summa	0012	High Frequency Energy Saving Device
David A Summers	0352	A Waterjet Mining Machine
David A Summers	0392	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
Claude V Swanson	0444	Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid
David L Swartz	0298	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
Patrick S Swihart, Senior	0249	Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells
Ronald S Tabery	0406	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
E M Talbott	0297	Series (Two-Wire) V-Controller
Wilford Dean Tannehill	0218	Behemoth
Curtis J Tanner	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
Jerry Tartaglino	0291	Selective Zone Isolation for HVAC System
Harold W Taylor, Junior	0373	Tobacco Harvesting Machine
Ruel Carlton Terry	0087	Recovering Uranium From Coal in Situ

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
Ruel Carlton Terry	0223	Minimizing Subsidence Effects during Production of Coal In Situ
Milton B Thacker	0414	Low Profile Fluid Catalytic Cracker
Victor R Thayer	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
Donald R Thomas	0222	Louver Trombe Solar Storage Unit
William W Thompson	0408	Floodshield System
Eugene Tippmann	0282	Insulated Siding
Edward M Tourtelot	0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
William R Trutna	0299	Process for Using Cocurrent Contacting Distillation Column
Harry Werner Tulleners	0345	Tulleners Wave Piercer
William Tunderman	0263	Method for Reconditioning Rivetless Chain Links
Shao-E Tung	0200	Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
Shao-E Tung	0319	Removal of Hydrogen Sulfide from a Gas Stream
Robert L Ullrich	0082	Cool Air Induction
William Vandersteel	0357	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
Christiaan P van Dijk	0348	Hydrogen Sulfide Removal for Natural Gas
Clinton Van Winkle	0090	Grain Dryer
Carmile F Vasile	0382	System for Recovery of Waste Hot Water Heat Energy
David Virley	0007	Hydraulically Powered Waste Disposal Device
Joseph B Vogt	0033	Temperature Indicating Device
Benjamin Volk	0332	Volk Pistachio Huller
Marvin L Wahrman	0079	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
Henry J Wallace	0113	Wallace Mold Additive System
Arleigh Wangler	0071	Knight Guard
H Roy Weber	0137	A Portable Pollution Free Automobile Incinerator
Roy J Weikert	0116	Model 5000 ASEPAK System
Oscar Weingart	0099	Light Weight Composite Trailer Tubes
John L Wendel	0339	Recycoil II
William C Whitman	0252	Thermal Bank
James B Whitmore	0121	Solar Space Heating for both Retrofit and New Construction
Hugh Edwin Whitted III	0250	A System to Adapt Diesel Engines to the Use of Crude Oils
Frank Wicks	0390	Wicks Efficient Fuel Utilization System
Stanley Wayne Widmer	0413	Non Metallic Railroad Switch Covers
Robert H Wieken	0057	X-5 Smoke Eliminator

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Inventor Name	DOE No.	Invention Title
David M Wilder	0323	Rolling Mill for Reduction of Moisture Content in Waste Material
William G Wilson	0443	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
Jack Winnick	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
Donald E Wise	0214	Convertible Flat/Drop Trailer
Serge Wisotsky	0432	Water Hammer Pile Driver
J C Withers	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction
James C Withers	0031	Ceramic Rotors and Vanes
Cecil H Wolf	0185	Insulated Garage Door
Douglas E Wood	0234	Geodesic Solar Paraboloid
Harry E Wood	0053	High Efficiency Water Heater
Harry E Wood	0238	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
Roy W Wood	0417	Rotary Drill Bit
Harrison Robert Woolworth	0010	Scrap Metal Preheating Method and Apparatus
Paul N Worsey	0326	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
Andrew Wortman	0307	Vortex Generators for Aft Regions of Aircraft Fuselages
Joseph C Yater	0004	Power Conversion of Energy Fluctuations
John W Yount	0209	Reclaiming Process for Resin Treated Fiberglass
Philip Zacuto	0066	Heat Extractor
Paul Zanoni	0112	Pump
Robert Zartarian	0120	Vapor Heat Transfer Commercial Griddle
Bernard Zimmern	0059	The Volumetric Gas Turbine
Michael F Zinn	0100	Solaroll
Allen D Zumbrunnen	0105	High Frequency Furnace

Table 4-2

RECOMMENDED INVENTIONS BY CONTACT NAME

Contact Name	DOE No.	Invention Title
John W Ackley, III	0306	An Efficiency Computer for Heated or Air Conditioned Buildings
Warren A Aikins	0356	Portable Automatic Firewood Processor
Glenn Albert	0358	Device for Well Site Monitoring and Control of Rod- Pumped Wells
Ray Alexander	0347	Oxide Dispersion Strengthened Aluminum Alloys
Joseph Allegro	0379	Inner Roof Solar System
Henry E Allen	0089	Continuous Casting Process and Apparatus
James E Altman	0378	An Improved Cutter for Plaster Board and the Like
Amar Amancharla	0143	Oil Well Pump Jack
Floyd R Anderson	0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
Frank L Anderson	0207	Glass Sheet Manufacturing Method and Apparatus
William F Armitage Jr	0041	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
Robert M Arthur	0047	Wastewater Aeration Power Control Device
George C Austin	0005	Diesel Engine Conversion System for Gasoline Engines
Don E Avery	0275	Low Head - High Volume Pump
Don E Avery	0301	Pump Control System for Windmills
Richard J Avery, Junior	0269	Refrigerant Accumulator and Charging Apparatus
Richard H Baasch	0257	Method and Apparatus for Melting Snow
Charles Bach	0185	Insulated Garage Door
Frank W Bailey	0125	The Turbulator Burner System
Basil W Balls	0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
Stanley D Balzer	0402	KTM Logger
A. D. Barrett, VP	0147	Railroad Switch Heater
Charlie Baziell	0068	Under Compression and Over Compression Free Helical Screw Rotary Compressor
Erwin O Beck	0369	"Fire Jet" Automatic Anthracite Burner
N. John Beck	0131	Valve Deactuator for Internal Combustion Engines
Theodore R Beck	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Karakian Bedrosian	0171	A Method of Preserving Fruits and Vegetables without Refrigeration
Daniel Ben-Shmuel	0066	Heat Extractor
Richard B Bentley	0051	Thermal Efficiency Construction
Karl H. Bergey	0110	Improved Windpower Generating System
Frank C Bernhard	0102	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners
Val O Bertoia	0095	Omni-Horizontal Axis-Wind Turbine
N F Bibby	0329	Modularized Pneumatic Tractor with Debris Liquifier
Charles James Bier	0083	Vertical Solar Louvers
Lawrence E Bissell	0037	Hotwater Engine
Wayne S Boals	0049	Automatic Control System for Water Heaters
Ranendra K Bose	0013	Anti-Pollution System
Alexander Bosna	0441	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby
Howard Bovars	0086	Coke Desulfurization
Paul E Bracegirdle	0261	A New Apparatus for Making Asphalt Concrete
Ronald E Brandon	0236	Steam Turbine Packing Ring
John A Broadbent	0355	Energy-Efficient Ice Cube Making Machine
Wayne S Brown	0418	Use of Chemical Vapor Deposition to Coat Metal Surfaces with High Temperature Superconducting Materials
James A Browning	0067	Windmill Using Hydraulic System for Energy Transfer and Speed Control
John W Bruce	0016	Method and Apparatus for Vacuum Drying of Commodities
Mario Bruno	0114	New Energy-Saving Tire for Motor Vehicles
James L Bullock	0015	Estacron
Bill Burley	0173	Thermal Ice Cap
Uwe H Butenhoff	0240	All Steam Heated Sadiron for Commercial Use
John C Calhoun, President	0032	Wood Gas Reactor
Robert Cameron	0050	Scotsman Fuel Energizer
Patsie C Campana	0080	Improved Unfired Refractory Brick
Marc S Caspe	0289	An Earthquake Barrier
Forrest E Chancellor	0154	Rotating Horsehead for Pumping Units
Shih-Chih Chang	0270	Method of Energy Recovery for Wastewater Treatment
Wu-Chi Chen	0165	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen
Kai-Chih Cheng	0262	Energy Saving Pump and Pumping System
Shang-I Cheng	0267	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Contact Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
Shang-I Cheng	0320	Coal Gasification with Carbon Dioxide and Lime Recycling
James L. Chill, President	0098	Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings
Agit Chowdhury	0264	Desulfurization of Coal
Deborah D Chung	0304	Exfoliated Graphite Fibers
James M Cleary	0155	Slip Mining
Nathan Cohn	0247	Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems
William H Cone	0060	Electric Transport Refrigerator
Edward B Connors	0167	Vaned Pipe for Pipeline Transport of Solids
Robert J Cromwell	0108	Processing Recovery of Aluminum
Albert B Csonka	0006	Micro-Carburetor
Donald Cullen	0283	Aluminum Roofing Chips
Harry Curtin	0235	Single Stage Anaerobic Digestion Process
Julius Czaja	0273	Open Cycle Latent Heat Engine
Richard E Dame	0180	Adjustable Solar Concentrator (ASC)
Sharad M Dave	0101	Controlled Combustion Engine
Alex DeFonso	0034	Delphic Thermogenic Paint (Heat Film)
Norman L Dickinson	0288	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
Gilbert W Didion	0028	Ultraflo
Lawrence A Dobson	0425	High Temperature Condensing Biomass Combustion System
Oscar Leonard Doellner	0194	Radiant Energy Power Source for Jet Aircraft
James J Dolan	0156	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
Jay Dornier	0056	Flexaflo-The Wet Fuel Dryer
Todd M Doscher	0415	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensable Gas
F David Doty	0440	Microtube Strip Heat Exchanger
Daniel Douenias	0254	"Turbo-Glo" Immersion Furnace
David W. Doyle, V.P.	0017	Osmotic-Hydro Power Generation
James L Doyle, Jr.	0383	Electro-Optic Inspection of Heat Exchangers
Gary L Drake	0342	Raw Fines Medium Coal Washing System
W B Driver	0421	Flexible Drill Pipe
Anthony A duPont	0161	duPont Connell Energy Coal Gasification Process
Enoch J Durbin	0069	Ionic Fuel Control System for the Internal Combustion Engine
Leonard A Duval	0148	Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Herbert D Easterly	0311	Auxiliary Truck Heater
John A Eastin	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
Gerald Eastman	0189	Pump Jack
Edwin E Eckberg	0103	Low Voltage Ionic Fluorescent Light Bulb
Charles E Edwards	0179	Development and Commercialization of Low Cost, Non- Metallic, Solar Systems
Lawrence K Edwards	0439	Project Twenty-One Rapid Transit System
Thomas C Edwards	0225	ROVAC High Efficiency Low Pressure Air-Conditioning System
Dan Egosi	0266	Energy Conversion Method
Raymond A Elam	0403	Enterprise Lubricator
Guy R B Elliott	0231	Natural Gas from Deep-Brine Solutions
Richard E Engdahl	0031	Ceramic Rotors and Vanes
James V Enright	0133	AUTOTHERM Car Comfort System
Donald C Erickson	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
Donald C Erickson	0025	Sulfur Removal from Producer Gas-High Temperature
Donald C Erickson	0230	Absorption Heat Pump Augmented Separation Process
Donald C Erickson	0364	Intermittent Solar Ammonia Absorption Cycle (ISAAC)
Donald C Erickson	0404	Steam-Methane Reforming in Molten Carbonate Salt
Hermann Ernst	0285	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
ETEC	0305	Automatic Filter Network Protection, Failure Detection and Correction System and Method
Robert F Evans	0166	Borehole Angle Control
Robert F Evans	0182	Improved Seal for Geothermal Drill Bit
Robert F Evans	0211	Shock Mounted Stratapax Bit
Norman C Fawley	0208	CNG Automotive Fuel Cylinders/Gas Transport Modules
Norman C Fawley	0227	CRM Pipe
Michael Feygin	0333	Laser Based Machine for Die and Prototype Manufacturing
Kenneth V Field	0353	Compu-Turbo-Aligner
Marshall Findley	0340	Separation of Adsorbed Components by Variable Temperature Desorption
William M Fiorito	0094	Lantz Converter
Joseph C Firey	0331	Cyclic Char Combustion for Engines, Boilers and Gasifiers
G R Fitterer	0018	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
G. R. Fitterer, President	0074	A Solid Electrolyte Galvanic Solar Energy Conversion Cell

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Lloyd Flatland	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
Dale Flickinger	0176	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
Joe W Fowler	0045	Bulk Cure Tobacco Barn with Improvements
Thomas F Francovitch	0292	Roof Construction Having Membrane and Photo Cells
Linus C Fuchek	0372	FS 630 Heat Pump Thermostat Control
Fuel Injection Dvlpmnt Corp	0122	Lean Limit Controller
Harald F Funk	0405	Prehydrolysis and Digestion of Plant Material
Jonathan Gabel	0206	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
David Ganoung	0411	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency
Juan M Garcia, Junior	0246	Maximum Cruise Performance
Gene Garrett	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
John D Garrison	0336	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
Richard J Gay	0241	Polysulfide Oil Field Corrosion Control System
Jim Gee	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
Philip H Gifford II	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
John D Gill	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
Richard P Gingras	0036	Computerstat
Paul Ginouves	0221	Strainercycle
Laird B Gogins	0420	The Utah Transmission/Continuously Variable Speed Wind Generator
Nathan Gold	0184	Coasting Fuel Shutoff
Meredith C Gourdine	0228	EGD Fog Dispersal System
William D Gramling	0159	Non-Tubing Type Lift Device, Described as the NTT Rabbit
Thorvald G Granryd	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
Evert S Green	0256	Method and Apparatus for Irrigating Container Grown Plants
Gwyer Grimminger, President	0224	Haile Alternate Fuel Grain Dryer
Gerald J Grott	0391	Compressed Gas Energy Storage

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Contact Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
Lloyd E Hackman	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
John Hair, III	0191	Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
Ogden H Hammond	0149	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
James R Harris	0407	An Extended Range Tankless Water Heater
Harold A Hartung	0385	Process for Treating Humus Materials
John C. Haspert	0111	Haspert Mining System
John C Haspert	0188	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
Louis A Hausknecht	0201	Hydraulic, Variable, Engine Valve Actuation System
Spencer Kim Haws	0168	The Hot Water Saver
August G Hebel, Junior	0412	Meta-Lax Stress Relief for Almost any Size Metal Structure
Rhey Hedges	0187	Variable Field Induction Motor
Lester Hendrickson	0064	The Mahalla Process--A Hydrometallurgical Method for Extracting Copper
Wanda Henke	0350	Method and Apparatus for Testing Soil
Lee A Henningsen	0065	WattVendor
H N Hensley	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
Ben B Herschel	0434	Modular Apparatus for Laundry Dryer Heat Recovery
Ronald Hertzfeld	0186	Oil Recovery by In-Situ Exfoliation Drive
Ronald M Hertzfeld	0146	Line Integral Method of Magneto-Electric Exploration
David E Hicks	0237	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles
Frank W Hochmuth	0437	Steam Generator With Integral Down-Draft Dryer
John H Holland	0395	Holland Oil Well Pumping System
Raymond P Holland Jr	0204	The Induction Propeller
Thomas P Hopper	0020	Thermal Shade
Vladimir Horak	0361	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations
Werner E Howald	0048	Howald Combustor
Dennis D Howard	0163	Thermotropic Plastic Films
Hugh Huislander	0212	Water Warden
Raymond Hunter	0296	Shower Bath Economizer
Robert M Hunter	0310	Portable Wastewater Flow Metering Device

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Russell D Ide	0399	Hydrodynamic/Multi Deflection Pad Bearing
Richard Jablin	0075	Coke Quenching Steam Generator
Richard Jablin	0215	Slag Waste Heat Boiler
E K Jacob	0349	Three Roll Tension Stand
Gulab Chand Jain	0035	Utilization of Solar Energy by Solar Pond System
Seymour Jarmul	0026	Compact Energy Reservoir
Sherman R Jenney	0052	Air Wedge
Gordon F Jensen	0388	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
Morris R Jeppson	0203	Microwave Methods and Apparatus for Paving and Paving Maintenance
Bob Johnson	0419	A Planing Machine to Produce Ultra-Fine Coal
William Martin Johnson	0351	Flash Gate Board
R J Jones	0027	Waste Heat Utilization for Commercial Cooking Equipment
Ray L Jones	0312	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
William A Jones	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
Charles G Kalt	0085	Dielectric Windowshade
Robert F Karlicek	0197	Frequency Regulator and Protective Devices for Synchronous Generators
Eskil L Karlson	0104	Low Continuous Energy Mass Separation System
Eskil L Karlson	0181	The Karlson Ozone Sterilizer
Eskil L Karlson	0346	Ultra-Pure Water System for Hospitals
Eskil L Karlson	0422	High Efficiency Ozone Generating System
Clyde F Kaunitz	0213	The Kaunitz Process for Welding Pipe
Jay Hilary Kelley	0394	Variable Wall Mining Machine
H. W. Kennick	0109	Hydrostatic Meat Tenderizer
Garry R Kenny	0243	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
James E Kessler	0129	Super U System - Snap Strap
M Hossein Khorsand	0135	Point Focus Parabolic Solar Collector
E A Kiessling	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
Richard F Kiley	0216	Method and Assembly for Mounting a Semiconductor Element
Robert Killoren	0438	Microwave Reflection by Synthetic Metals
Rees Kinney, Atty.	0091	Mine Brattice

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Charles M Kirk	0058	A Multiple Spark System Using Inductive Storage
Max Klein	0314	Rolling Filter Apparatus
Peter Kneaskern	0410	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
Michael Knezevich	0132	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
Robert J Koester	0282	Insulated Siding
Edward S Kress	0260	Method and Apparatus for Handling and Dry Quenching Coke
Kenneth R Kurple	0232	Method of Separating Lignin and Making Epoxide- Lignin
Lawrence Ladin	0088	System-100
Lawrence W Langley	0426	Eddy Current Transducing System
Murry S. Laskey	0061	Fuel Preparation Process
James H Lawler	0039	Lawler Steam Generator and Lawler System of Thermal Oil Recovery
W N Lawless	0190	Oxygen-Conducting Material and Oxygen-Sensing Method
W N Lawless	0401	A Miniature, Inexpensive Oxygen-Sensing Element
Leon Lazare	0044	New Working Fluids for Increasing the Cycle Efficiencies of Thermal
Leon Lazare	0160	High Efficiency Absorption Refrigeration Cycle
Leon Lazare	0362	Improved Solvents for the Puraq Seawater Desalination Process
Leon Lazare	0377	A Novel Method of Producing Ice-Water Slurries
Maurice W Lee, Junior	0322	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
Leonard R Lefkowitz	0363	Impactor Separator
Herbert G Lehmann	0022	Fuel Burner Attachment
Robert C LeMay	0309	Process of Smelting with Submerged Burner
Edward Levi	0199	Rotary Coal Combustor and Heat Exchangers
Donald C Lewis	0192	Closed Cycle Dehumidification Clothes Dryer
Donald E Lewis	0397	In Service Tank Bottom Leak Detection and Repair System
George S Lewis	0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
Yao Tzu Li	0202	Wobbling Type Distillation Apparatus
Ping-Wha Lin	0107	Waste Products Reclamation Process
William Lindner	0334	So-Luminaire Natural Daylighting Unit

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Contact Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
Waylon A Livingston	0393	Method and Apparatus for Ultrasonic Testing of Tubular Goods
Daniel A Lockie	0233	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
Thomas LoGiudice	0063	Fluorobulb
Harlan K Loveness	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
Murray G Lowenthal	0001	Demand Metering System for Electric Energy
James E Luber	0023	Microgas Dispersions
Mary Jane Luddy	0398	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
Kenneth E Lunde	0427	Non-Catalytic Steam Hydrolysis of Fats
William C Lyons	0338	Downhole Pneumatic Turbine Motor for Geothermal Energy
Robert A Maciejczak	0335	Robotic Bridge Observation and Information System
Frank J Madison II	0313	Process Controller for Stripper Oil Well Pumping Units
David S Majkrzak	0152	Vehicle Exhaust Gas Warm-up System
Momtaz N Mansour	0286	Use of Pulse-Jet for Atomization of Coal/Water Mixture
Bernard Joseph Margowsky	0138	Phantom Tube
Alvin M Marks	0009	Heat/Electric Power Conversion via Charged Aerosols
Andrew W Marr, Junior	0280	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
Don J Marshall	0287	Automatic Variable Pitch Marine Propeller
Louis L Marton	0139	Transformer With Heat Dissipator
George E Mattson	0117	"Solarspan" Prism Trap
John H Mayo	0386	Device and Method to Enable Detection and Measurement of Deformities in Well Components
Kenneth E Mayo	0029	Tuned Sphere Stable Ocean Platforms
James McArthur	0300	Casing Stabbing Apparatus
John McCallum	0038	Reduction Volatilizations
James W McCord	0077	Variable Heat Refrigeration System
James W McCord	0097	Water Drying System
John A McDougal	0343	Electronic Octane
Jack Wade McIntyre	0431	Method and Apparatus for Removing Excess Water from Subterranean Wells.
Robert McNeill	0078	System for High Efficiency Power Generation from Low Temperature Sources
Albert L McQuillen, Jr	0157	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
Thomas R Mee	0170	Fog System - Low Energy Freeze Protection for Agriculture

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Serafin L Mendoza	0435	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
Thomas M Meshbeshier	0219	Method for Making Acetaldehyde from Ethanol
Ralph A Messing	0315	Method of Processing Biodegradable Organic Material
Paul Michelotti	0368	Aircraft Minimum Drag Speed System
Anatol Michelson	0142	Process for Heatless Production of Hollow Items
Edward W Midlam	0150	The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
E. Stephen Miliaras	0183	Increased Vapor Generator Feature for a Reheat Vapor Generator
Everett Millard	0042	Flue Baffle Assembly
Drew W Morris	0024	Can and Bottle Crushing Apparatus
Ed Morris, President	0099	Light Weight Composite Trailer Tubes
Robert H Nealy	0198	The Thermatreat System
Edward A Griswold	0172	GEM Electrostatic Filtration System
F Terry Nixon	0326	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
F Terry Nixon	0341	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials
Terry Nixon	0316	Thrust Impact Rock Splitter
Terry Nixon	0367	Disintegration of Wood
Terry Nixon	0392	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
Nestor Noriega	0396	Dyna Flow
Robert S Norris	0021	Waste Oil Utilization System
John W North	0178	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
Kenneth W Odil	0084	Kinetic Energy Type Pumping System
Rita Paleschuck	0002	Fuel Miser
Forrest M Palmer	0325	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
Richard D Palone	0055	Electrically Heated Sucker-Rod
C Richard Panico	0081	Flash Polymerization
Thaddeus Papis	0062	Tapered Plate Annular Matrix
Sidney A Parker	0043	Thermal Gradient Utilization Cycle
Trent J Parker	0428	Uni-Frac Column and T-By Tray
Thomas Neil Parker, Junior	0245	Improved Oil Well Pumping Unit
Nathan E Passman	0274	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
Carl E Pearl	0153	A New Equipment Design Concept for Storage of Hot Foods

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Contact Name</u>	<u>DOE No.</u>	<u>Invention Title</u>
J. Paul Pemsler, President	0123	Comminution of Ores by a Low-Energy Process
J Paul Pemsler	0295	Improved Method of Electroplating Aluminum for Corrosion Resistance
Joe C Pendergrass	0371	Wallace Energy Systems Solar Assisted Heat Pump Water Heater
Anthony Peters	0253	High Performance Heat Pump
Deems M Pfaff	0344	Machine for Separating Concrete from Steel
Brad L Pfeifley	0244	CHARLIE - Trademark - Federally Registered 1123957
PFI, Inc	0293	"Therm-A-Valve" - Insulated Valve Coverings
Clyde G Phillips	0115	Refrigeration System
James W Platte	0359	Solid Fuel Hot Air Furnace
Gene Plattner	0174	Skate on Plastic Ice Skating System
Lemuel Leslie Ply	0162	Tubular Pneumatic Conveyor Pipeline
Arnold R Post	0130	Furnace Input Capacity Trimming Switch
Mark Pridmore	0195	Proportional Current Battery
Bryan Prucher	0409	Self-Dressing Resistance Welding Electrode
Paul F Pugh	0158	Energy Conservative Electric Cable System
B F Rabitsch	0327	Square Pattern Irrigation Sprinkler
Arthur Radichio	0416	Self-Contained Pipe Freezing Unit
Kenneth H Raihala	0365	Safety Stovepipe Damper Assembly
Anthony T Rallis	0258	Corrosion Protection Process for Bore Hole Tool
James L Ramer	0106	Deep Shaft Hydro-Electric Power
Richard C Raney	0442	Long Life "PC" Drill Bit
Mister Raymo	0205	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
Jay Read	0308	Binary Azeotropic, Hot Gas, Fat Extraction Process
Emil B Rechsteiner	0376	Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores
Douglas R Reich	0279	Method and Means for Preventing Frost Damage to Crops
Clair H Reinbergen, Pres.	0019	Phenol Methylene Foam Rigid Board Insulation
William B Retallick	0271	Hydrogen Storage System
Albert S Richardson, Jr.	0136	Windamper
Albert S Richardson, Junior	0375	MDT Twister
Albert S Richardson, Junior	0429	A Low Cost Galloping Indicator
John W Richardson	0265	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
R L Risberg	0366	High Energy Semiconductor Switch
Donald R Ross	0076	The Ross Furnace

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Greg Ross	0290	Low Energy Ice Making Apparatus
Robert F Roussey, Junior	0328	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
John C Rupert	0134	Expanded Polystyrene Bead Insulation System
Thomas J Russo	0012	High Frequency Energy Saving Device
Stewart Ryan	0226	An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings
Melvin H Sachs	0073	INTECH
Charlton Sadler	0124	Solar Collector
Robert E Salomon	0145	Solar Conversion by Concentration Cells with Hydrides
Robert E Salomon	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
Arthur D Sams	0281	Sun Synchronous Solar Powered Refrigerator
Nicholas Archer Sanders	0193	Engine Heating Device
Nicholas Archer Sanders	0303	Battery Heating Device
Joe Sanford	0436	The Russell Self-Piloted Check Valve
Bernard L Sater	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
Robert C Saunders, Junior	0144	SpaCirc Space Circulation Fan
Harold T Sawyer	0268	Apparatus for Enhancing Chemical Reactions
Karl D Scheffer	0126	Vaclaim
William R Schick	0339	Recycoil II
Lawrence A Schmid	0360	Temperature Controllable Heat Valve
Daniel J Schneider	0014	Aerodynamic Lift Translator
Charles A Schwartz	0220	Deep Throat Resistance Welder
Gerhard E Schwarz	0400	Continuous Casting and Inside Rolling of Hollow Rounds
Donald W Scott	0389	Reduced Size Heating Assembly for an Electric Stove
J D Seader	0127	Process and Apparatus to Produce Crude Oil from Tar Sands
J D Seader	0128	Continuous Distillation Apparatus and Method
Felix Sebba	0354	Preparation of Biliquid Foam Compositions
David J Secunda	0046	Thexon Dehydration
SETRA Systems, Inc.	0151	Film Type Storm Window
W W Seward	0175	A Low-Energy Carpet Backing System
David N Shaw	0374	Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines
Edward H Shelander	0093	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Samuel Shiber	0141	New Hydrostatic Transmission
Donald Shuler	0242	New Petersburg Beam Trawl
Edward Perry Sikes, Jr.	0054	Optimizer
Smart Technologies, Inc	0277	Electronic Conveyor Control Apparatus
Otis W Smith	0119	Air Ratio Controller (AERTROL)
Roderick L Smith	0118	Energy Adaptive Control of Precision Grinding
Ronald H Smith	0011	Solar Collector
Joseph D Snitgen	0337	An Air Operated Hydraulic Power Unit
Ray E Snyder	0352	A Waterjet Mining Machine
Roland P Soule	0040	Improved Equipment and Process for Production of Blue Water Gas
Len Spelber	0007	Hydraulically Powered Waste Disposal Device
Henry Sperber	0380	Blow-In Blanket System
Norbert E Stainbrook	0330	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
Roger Stamper	0092	Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
Walter A Stark	0370	Dehumidification System for Indoor Pools and Other High Humidity Areas
Robert John Starr	0177	The Solar I Option
Brett Stern	0424	An Automated Process for Garment Manufacturers
Carl L Sterner	0294	Highway Power Patcher
James M Stewart	0278	Complete System for Large Solar Water Heating and Storage
Kenneth A Stofen	0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
Arthur F Stone	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
William P Strumbos	0381	Multiple Heat-Range Spark Plug
Claude V Swanson	0444	Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid
David L Swartz	0298	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
Patrick S Swihart, Senior	0249	Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells
Ronald S Tabery	0406	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
Wilford Dean Tannehill	0218	Behemoth
Jerry Tartaglino	0291	Selective Zone Isolation for HVAC System
Harold W Taylor, Junior	0373	Tobacco Harvesting Machine
Ruel Carlton Terry	0087	Recovering Uranium From Coal in Situ
Ruel Carlton Terry	0223	Minimizing Subsidence Effects during Production of Coal In Situ

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Milton B Thacker	0414	Low Profile Fluid Catalytic Cracker
Donald R Thomas	0222	Louver Trombe Solar Storage Unit
Carter Thompson	0169	MIRAFOUNT
William W Thompson	0408	Floodshield System
Phil Tippet	0302	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
Edward M Tourtelot	0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
David R Tree	0272	V-Plus System
David R Tree	0284	Atomized Oil-Injected Rotary Screw Compressors
Harry Werner Tulleners	0345	Tulleners Wave Piercer
William Tunderman	0263	Method for Reconditioning Rivetless Chain Links
Shao-E Tung	0200	Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
Shao-E Tung	0319	Removal of Hydrogen Sulfide from a Gas Stream
Fred Tunmore	0008	Inertial Storage Transmission
Robert L Ullrich	0082	Cool Air Induction
William Vandersteel	0357	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
Christiaan P van Dijk	0348	Hydrogen Sulfide Removal for Natural Gas
Clinton Van Winkle	0090	Grain Dryer
Varigas Research, Inc	0297	Series (Two-Wire) V-Controller
Carmile F Vasile	0382	System for Recovery of Waste Hot Water Heat Energy
Joseph B Vogt	0033	Temperature Indicating Device
Benjamin Volk	0332	Volk Pistachio Huller
Marvin L Wahrman	0079	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
Henry J Wallace	0113	Wallace Mold Additive System
Ken Walmer	0030	Method of Removing Sulfur Dioxide from Flue Gases
Arleigh Wangler	0071	Knight Guard
H Roy Weber	0137	A Portable Pollution Free Automobile Incinerator
Roy J Weikert	0116	Model 5000 ASEPAK System
William C Whitman	0252	Thermal Bank
James B Whitmore	0121	Solar Space Heating for both Retrofit and New Construction
Hugh Edwin Whitted III	0250	A System to Adapt Diesel Engines to the Use of Crude Oils
Giles M Whitten	0430	Whitten Dugas Mud Pump Ehnancer
Frank Wicks	0390	Wicks Efficient Fuel Utilization System

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Contact Name	DOE No.	Invention Title
Stanley Wayne Widmer	0413	Non Metallic Railroad Switch Covers
Robert H Wieken	0057	X-5 Smoke Eliminator
David M Wilder	0323	Rolling Mill for Reduction of Moisture Content in Waste Material
Tony Wilhelm	0140	Counter Flow Dual Tube Heat Exchanger
William G Wilson	0443	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
Jack Winnick	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
Donald E Wise	0214	Convertible Flat/Drop Trailer
Serge Wisotsky	0432	Water Hammer Pile Driver
Douglas E Wood	0234	Geodesic Solar Paraboloid
Harry E Wood	0053	High Efficiency Water Heater
Harry E Wood	0238	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
Roy W Wood	0417	Rotary Drill Bit
Harrison Robert Woolworth	0010	Scrap Metal Preheating Method and Apparatus
Andrew Wortman	0307	Vortex Generators for Aft Regions of Aircraft Fuselages
Joseph C Yater	0004	Power Conversion of Energy Fluctuations
John W Yount	0209	Reclaiming Process for Resin Treated Fiberglass
Paul Zanoni	0112	Pump
Robert Zartarian	0120	Vapor Heat Transfer Commercial Griddle
Bernard Zimmern	0059	The Volumetric Gas Turbine
Michael F Zinn	0100	Solaroll
Allen D Zumbrunnen	0105	High Frequency Furnace

Table 4-3

RECOMMENDED INVENTIONS BY INVENTION CLASSIFICATION

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
1.00000		Fuels and Lubricants Acquisition, Production, Distribution
	0032	Wood Gas Reactor
	0161	duPont Connell Energy Coal Gasification Process
	0414	Low Profile Fluid Catalytic Cracker
1.01000		Geophysical Prospecting
	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
1.11000		Coal Mining and Mining Equipment
	0086	Coke Desulfurization
	0091	Mine Brattice
	0111	Haspert Mining System
	0112	Pump
	0155	Slip Mining
	0188	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
	0223	Minimizing Subsidence Effects during Production of Coal In Situ
	0352	A Waterjet Mining Machine
1.11200		Coal Gasification
	0320	Coal Gasification with Carbon Dioxide and Lime Recycling
1.11300		Coal Greater Resource Recovery Methods
	0268	Apparatus for Enhancing Chemical Reactions
1.12000		Oil Wells
	0029	Tuned Sphere Stable Ocean Platforms
	0039	Lawler Steam Generator and Lawler System of Thermal Oil Recovery
	0055	Electrically Heated Sucker-Rod
	0079	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
	0127	Process and Apparatus to Produce Crude Oil from Tar Sands
	0128	Continuous Distillation Apparatus and Method
	0143	Oil Well Pump Jack
	0146	Line Integral Method of Magneto-Electric Exploration
	0154	Rotating Horsehead for Pumping Units
	0159	Non-Tubing Type Lift Device, Described as the NTT Rabbit
	0166	Borehole Angle Control
	0186	Oil Recovery by In-Situ Exfoliation Drive
	0211	Shock Mounted Stratapax Bit

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
1.12000		Oil Wells (cont.)
	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
	0241	Polysulfide Oil Field Corrosion Control System
	0245	Improved Oil Well Pumping Unit
	0249	Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells
	0280	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
	0293	"Therm-A-Valve" - Insulated Valve Coverings
	0300	Casing Stabbing Apparatus
	0312	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
	0313	Process Controller for Stripper Oil Well Pumping Units
	0338	Downhole Pneumatic Turbine Motor for Geothermal Energy
	0358	Device for Well Site Monitoring and Control of Rod- Pumped Wells
	0386	Device and Method to Enable Detection and Measurement of Deformities in Well Components
	0392	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
	0395	Holland Oil Well Pumping System
	0403	Enterprise Lubricator
	0415	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensable Gas
	0417	Rotary Drill Bit
	0430	Whitten Dugas Mud Pump Enhancer
	0442	Long Life "PC" Drill Bit
1.12200		Oil Greater Resource Recovery Equipment
	0421	Flexible Drill Pipe
	0431	Method and Apparatus for Removing Excess Water from Subterranean Wells.
1.13000		Oil Shale
	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
1.14000		Natural Gas
	0088	System-100
	0208	CNG Automotive Fuel Cylinders/Gas Transport Modules
	0231	Natural Gas from Deep-Brine Solutions
1.20000		Alternate Fuels
	0023	Microgas Dispersions
	0040	Improved Equipment and Process for Production of Blue Water Gas

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
1.23000		Hydrogen
	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
	0165	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen
1.26000		Fuel Cells
	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
1.28000		Bioengineering and Medical Processes
	0235	Single Stage Anaerobic Digestion Process
	0315	Method of Processing Biodegradable Organic Material
	0385	Process for Treating Humus Materials
	0405	Prehydrolysis and Digestion of Plant Material
	0425	High Temperature Condensing Biomass Combustion System
2.00000		Energy Conversion From Natural Sources
	0017	Osmotic-Hydro Power Generation
	0078	System for High Efficiency Power Generation from Low Temperature Sources
2.10000		Solar Collectors
	0004	Power Conversion of Energy Fluctuations
	0011	Solar Collector
	0035	Utilization of Solar Energy by Solar Pond System
	0041	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
	0074	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
	0100	Solaroll
	0117	"Solarspan" Prism Trap
	0121	Solar Space Heating for both Retrofit and New Construction
	0124	Solar Collector
	0135	Point Focus Parabolic Solar Collector
	0145	Solar Conversion by Concentration Cells with Hydrides
	0177	The Solar I Option
	0179	Development and Commercialization of Low Cost, Non- Metallic, Solar Systems
	0180	Adjustable Solar Concentrator (ASC)
	0222	Louver Trombe Solar Storage Unit
	0234	Geodesic Solar Paraboloid
	0278	Complete System for Large Solar Water Heating and Storage
	0292	Roof Construction Having Membrane and Photo Cells
	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell

Classif.	DOE No	Title
2.10000	Solar Collectors (cont.)	
	0334	So-Luminaire Natural Daylighting Unit
	0336	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
	0379	Inner Roof Solar System
2.20000	Geothermal	
	0182	Improved Seal for Geothermal Drill Bit
2.40000	Wind	
	0014	Aerodynamic Lift Translator
	0067	Windmill Using Hydraulic System for Energy Transfer and Speed Control
	0095	Omni-Horizontal Axis-Wind Turbine
	0110	Improved Windpower Generating System
2.50000	Water Power Processes (inland)	
	0197	Frequency Regulator and Protective Devices for Synchronous Generators
	0351	Flash Gate Board
????2.80000		
	0043	Thermal Gradient Utilization Cycle
3.00000	Energy Conversion From Secondary Sources	
	0009	Heat/Electric Power Conversion via Charged Aerosols
	0037	Hotwater Engine
	0062	Tapered Plate Annular Matrix
	0077	Variable Heat Refrigeration System
	0273	Open Cycle Latent Heat Engine
3.10000	Combustion Engines and Components Thereof	
	0048	Howald Combustor
3.11000	Reciprocal Engines, Mechanical	
	0005	Diesel Engine Conversion System for Gasoline Engines
	0054	Optimizer
	0101	Controlled Combustion Engine
	0122	Lean Limit Controller
	0131	Valve Deactuator for Internal Combustion Engines

DOE Classif. No	Title
3.11000	Reciprocal Engines, Mechanical (cont.)
0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
0331	Cyclic Char Combustion for Engines, Boilers and Gasifiers
0343	Electronic Octane
0374	Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines
3.12000	Rotary Engines, Mechanical
0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
3.13000	Turbine Engines, Mechanical
0031	Ceramic Rotors and Vanes
0059	The Volumetric Gas Turbine
3.14000	Fuel systems, Mechanical
0006	Micro-Carburetor
0069	Ionic Fuel Control System for the Internal Combustion Engine
0250	A System to Adapt Diesel Engines to the Use of Crude Oils
0411	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency
3.14100	Carburetors and Modifications Thereof
0050	Scotsman Fuel Energizer
0184	Coasting Fuel Shutoff
3.15000	Ignition Systems
0381	Multiple Heat-Range Spark Plug
3.20000	Steam Engines and Turbines, Mechanical
0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
0236	Steam Turbine Packing Ring
3.30000	Air Compressors and Motors
0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner

Classif.	DOE No	Title
3.40000		Hydraulic Pumps and Motors
	0189	Pump Jack
	0262	Energy Saving Pump and Pumping System
	0275	Low Head - High Volume Pump
	0301	Pump Control System for Windmills
3.50000		Electric Motors and Generators
	0060	Electric Transport Refrigerator
	0106	Deep Shaft Hydro-Electric Power
	0187	Variable Field Induction Motor
	0206	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
	0216	Method and Assembly for Mounting a Semiconductor Element
	0366	High Energy Semiconductor Switch
3.60000		Chemical Thermodynamics
	0219	Method for Making Acetaldehyde from Ethanol
3.70000		Mechanical Thermodynamics
	0435	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
	0440	Microtube Strip Heat Exchanger
3.80000		Heat Pumps and Refrigeration
	0044	New Working Fluids for Increasing the Cycle Efficiencies of Thermal
4.00000		Energy Storage and Distribution
	0227	CRM Pipe
	0271	Hydrogen Storage System
	0391	Compressed Gas Energy Storage
4.11000		Electrical Transmission
	0195	Proportional Current Battery
4.12000		Electrical Distribution (Transformers, Switchgears, Controls)
	0136	Windamper
	0139	Transformer With Heat Dissipator
	0158	Energy Conservative Electric Cable System
	0247	Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
4.12000		Electrical Distribution (cont.)
	0376	Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores
4.30000		Thermal Energy Storage
	0026	Compact Energy Reservoir
	0252	Thermal Bank
5.00000		Transportation
	0357	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
5.10000		Air Transportation
	0194	Radiant Energy Power Source for Jet Aircraft
	0228	EGD Fog Dispersal System
	0246	Maximum Cruise Performance
	0307	Vortex Generators for Aft Regions of Aircraft Fuselages
	0368	Aircraft Minimum Drag Speed System
5.20000		Water Transportation
	0204	The Induction Propeller
	0287	Automatic Variable Pitch Marine Propeller
	0345	Tulleners Wave Piercer
5.30000		Rail Transportation
	0147	Railroad Switch Heater
	0285	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
	0413	Non Metallic Railroad Switch Covers
	0439	Project Twenty-One Rapid Transit System
5.40000		Highway Vehicles and systems
	0099	Light Weight Composite Trailer Tubes
	0214	Convertible Flat/Drop Trailer
5.42000		Vehicular Power Systems
	0058	A Multiple Spark System Using Inductive Storage
5.42100		Combustion Engine Vehicles
	0013	Anti-Pollution System

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Classif.	DOE No	Title
5.43000		Vehicular Components
	0133	AUTOTHERM Car Comfort System
	0152	Vehicle Exhaust Gas Warm-up System
	0193	Engine Heating Device
	0201	Hydraulic, Variable, Engine Valve Actuation System
	0237	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles
	0303	Battery Heating Device
	0311	Auxiliary Truck Heater
5.43100		Vehicle Transmissions
	0008	Inertial Storage Transmission
	0141	New Hydrostatic Transmission
	0420	The Utah Transmission/Continuously Variable Speed Wind Generator
5.43200		Vehicle Braking Systems
	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
	0244	CHARLIE - Trademark - Federally Registered #1123957
5.43300		Vehicle Wheels and Tires
	0114	New Energy-Saving Tire for Motor Vehicles
5.43500		Vehicle body and Chassis Design
	0052	Air Wedge
5.43800		Vehicle Air Conditioning
	0225	ROVAC High Efficiency Low Pressure Air Conditioning System
6.10000		Building Design, Construction and Construction Practices
	0051	Thermal Efficiency Construction
	0073	INTECH
	0083	Vertical Solar Louvers
	0283	Aluminum Roofing Chips
	0289	An Earthquake Barrier
6.20000		Building Heating, Cooling, and Ventilating
	0036	Computerstat
	0068	Under Compression and Over Compression Free Helical Screw Rotary Compressor

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Classif.	DOE No	Title
6.20000		Building Heating, Cooling, and Ventilating (cont.)
	0092	Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
	0163	Thermotropic Plastic Films
	0174	Skate on Plastic Ice Skating System
	0191	Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
	0221	Strainercycle
	0390	Wicks Efficient Fuel Utilization System
6.20100		Building Heating, cooling, Ventilating Instruments and Controls
	0002	Fuel Miser
	0033	Temperature Indicating Device
	0149	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
	0226	An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings
	0291	Selective Zone Isolation for HVAC System
	0360	Temperature Controllable Heat Valve
	0372	FS 630 Heat Pump Thermostat Control
6.23000		Boilers and Furnaces
	0053	High Efficiency Water Heater
	0057	X-5 Smoke Eliminator
	0130	Furnace Input Capacity Trimming Switch
	0176	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
	0199	Rotary Coal Combustor and Heat Exchangers
	0266	Energy Conversion Method
	0359	Solid Fuel Hot Air Furnace
	0365	Safety Stovepipe Damper Assembly
	0369	"Fire Jet" Automatic Anthracite Burner
	0383	Electro-Optic Inspection of Heat Exchangers
	0410	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
	0437	Steam Generator With Integral Down-Draft Dryer
6.23100		Boiler and Furnace Flue Heat Recovery
	0027	Waste Heat Utilization for Commercial Cooking Equipment
	0042	Flue Baffle Assembly
6.23200		Boiler and Furnace Air and Oxygen Inductors and Injectors
	0022	Fuel Burner Attachment

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Classif.	DOE No	Title
6.23400		Boiler and Furnace Oil Burners
	0102	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners
	0125	The Turbulator Burner System
6.23600		Boiler and Furnace Combustion Controls and Equipments
	0288	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
6.23700		Boiler and Furnace Coal-Oil-Water Mixtures
	0286	Use of Pulse-Jet for Atomization of Coal/Water Mixture
6.24000		Electric Heat
	0034	Delphic Thermogenic Paint (Heat Film)
6.25000		Heat Pumps
	0230	Absorption Heat Pump Augmented Separation Process
	0253	High Performance Heat Pump
	0371	Wallace Energy Systems Solar Assisted Heat Pump Water Heater
6.26000		Air conditioning & Refrigeration
	0160	High Efficiency Absorption Refrigeration Cycle
	0269	Refrigerant Accumulator and Charging Apparatus
	0272	V-Plus System
	0281	Sun Synchronous Solar Powered Refrigerator
	0284	Atomized Oil-Injected Rotary Screw Compressors
	0290	Low Energy Ice Making Apparatus
	0298	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
	0370	Dehumidification System for Indoor Pools and Other High Humidity Areas
	0377	A Novel Method of Producing Ice-Water Slurries
	0396	Dyna Flow
6.27000		Ventilating systems
	0144	SpaCirc Space Circulation Fan
6.30000		Hot Water Supply
	0168	The Hot Water Saver

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE Classif. No	Title
6.31000	Heating Systems (Hot Water)
0339	Recycoil II
0407	An Extended Range Tankless Water Heater
6.32000	Hot Water conservation Devices and Practices
0028	Ultraflo
0049	Automatic Control System for Water Heaters
0296	Shower Bath Economizer
0382	System for Recovery of Waste Hot Water Heat Energy
6.40000	Insulation and Insulating Practices
0015	Estacron
0019	Phenol Methylene Foam Rigid Board Insulation
0020	Thermal Shade
0085	Dielectric Windowshade
0129	Super U System - Snap Strap
0134	Expanded Polystyrene Bead Insulation System
0151	Film Type Storm Window
0173	Thermal Ice Cap
0185	Insulated Garage Door
0209	Reclaiming Process for Resin Treated Fiberglass
0282	Insulated Siding
0380	Blow-In Blanket System
6.50000	Electrical Wiring Fixtures
0012	High Frequency Energy Saving Device
0063	Fluorobulb
0071	Knight Guard
0103	Low Voltage Ionic Fluorescent Light Bulb
0138	Phantom Tube
0297	Series (Two-Wire) V-Controller
6.60000	Plumbing and Fixtures
0212	Water Warden
0416	Self-Contained Pipe Freezing Unit
0436	The Russell Self-Piloted Check Valve
7.00000	Chemical, Chemical Process Industries Unit Operations
0010	Scrap Metal Preheating Method and Apparatus
0016	Method and Apparatus for Vacuum Drying of Commodities
0018	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
0021	Waste Oil Utilization System

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE Classif. No	Title
7.00000	Chemical, Chemical Process Industries Unit Operations (cont.)
0024	Can and Bottle Crushing Apparatus
0025	Sulfur Removal from Producer Gas-High Temperature
0030	Method of Removing Sulfur Dioxide from Flue Gases
0038	Reduction Volatilizations
0045	Bulk Cure Tobacco Barn with Improvements
0046	Thexon Dehydration
0047	Wastewater Aeration Power Control Device
0056	Flexaflo-The Wet Fuel Dryer
0061	Fuel Preparation Process
0064	The Mahalla Process--A Hydrometallurgical Method for Extracting Copper
0066	Heat Extractor
0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
0075	Coke Quenching Steam Generator
0076	The Ross Furnace
0080	Improved Unfired Refractory Brick
0081	Flash Polymerization
0084	Kinetic Energy Type Pumping System
0087	Recovering Uranium From Coal in Situ
0089	Continuous Casting Process and Apparatus
0093	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions
0094	Lantz Converter
0097	Water Drying System
0098	Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings
0105	High Frequency Furnace
0107	Waste Products Reclamation Process
0108	Processing Recovery of Aluminum
0113	Wallace Mold Additive System
0116	Model 5000 ASEPAK System
0118	Energy Adaptive Control of Precision Grinding
0119	Air Ratio Controller (AERTROL)
0123	Comminution of Ores by a Low-Energy Process
0126	Vaclaim
0132	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
0137	A Portable Pollution Free Automobile Incinerator
0142	Process for Heatless Production of Hollow Items
0148	Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes
0150	The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
0156	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Classif.	DOE No	Title
7.00000		Chemical, Chemical Processes Industrial Unit Operations (cont.)
	0157	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
	0162	Tubular Pneumatic Conveyor Pipeline
	0167	Vaned Pipe for Pipeline Transport of Solids
	0172	GEM Electrostatic Filtration System
	0175	A Low-Energy Carpet Backing System
	0178	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
	0183	Increased Vapor Generator Feature for a Reheat Vapor Generator
	0198	The Thermatreat System
	0200	Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
	0205	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
	0207	Glass Sheet Manufacturing Method and Apparatus
	0213	The Kaunitz Process for Welding Pipe
	0215	Slag Waste Heat Boiler
	0218	Behemoth
	0220	Deep Throat Resistance Welder
	0232	Method of Separating Lignin and Making Epoxide- Lignin
	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
	0242	New Petersburg Beam Trawl
	0243	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
	0254	"Turbo-Glo" Immersion Furnace
	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
	0258	Corrosion Protection Process for Bore Hole Tool
	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
	0260	Method and Apparatus for Handling and Dry Quenching Coke
	0261	A New Apparatus for Making Asphalt Concrete
	0264	Desulfurization of Coal
	0267	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge
	0270	Method of Energy Recovery for Wastewater Treatment
	0295	Improved Method of Electroplating Aluminum for Corrosion Resistance
	0299	Process for Using Cocurrent Contacting Distillation Column
	0308	Binary Azeotropic, Hot Gas, Fat Extraction Process
	0309	Process of Smelting with Submerged Burner
	0310	Portable Wastewater Flow Metering Device
	0314	Rolling Filter Apparatus
	0316	Thrust Impact Rock Splitter
	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
	0319	Removal of Hydrogen Sulfide from a Gas Stream

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
7.00000		Chemical, Chemical Processes Industrial Unit Operations (cont.)
	0323	Rolling Mill for Reduction of Moisture Content in Waste Material
	0325	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
	0326	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
	0329	Modularized Pneumatic Tractor with Debris Liquifier
	0330	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
	0337	An Air Operated Hydraulic Power Unit
	0340	Separation of Adsorbed Components by Variable Temperature Desorption
	0341	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials
	0342	Raw Fines Medium Coal Washing System
	0344	Machine for Separating Concrete from Steel
	0346	Ultra-Pure Water System for Hospitals
	0347	Oxide Dispersion Strengthened Aluminum Alloys
	0348	Hydrogen Sulfide Removal for Natural Gas
	0349	Three Roll Tension Stand
	0354	Preparation of Biliquid Foam Compositions
	0362	Improved Solvents for the Puraq Seawater Desalination Process
	0363	Impactor Separator
	0364	Intermittent Solar Ammonia Absorption Cycle (ISAAC)
	0367	Disintegration of Wood
	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
	0388	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
	0397	In Service Tank Bottom Leak Detection and Repair System
	0400	Continuous Casting and Inside Rolling of Hollow Rounds
	0404	Steam-Methane Reforming in Molten Carbonate Salt
	0406	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
	0412	Meta-Lax Stress Relief for Almost any Size Metal Structure
	0419	A Planing Machine to Produce Ultra-Fine Coal
	0422	High Efficiency Ozone Generating System
	0427	Non-Catalytic Steam Hydrolysis of Fats
	0432	Water Hammer Pile Driver
	0438	Microwave Reflection by Synthetic Metals
7.01200		Primary Non-Ferrous Metals
	0418	Use of Chemical Vapor Deposition to Coat Metal Surfaces with High Temperature Superconducting Materials
	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
7.01700	Miscellaneous - Desalinization - Electrolysis	
	0305	Automatic Filter Network Protection, Failure Detection and Correction System and Method
7.02400	Stack Gas Scrubbers	
	0443	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
	0444	Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid
7.06000	Petroleum, Oil and Natural Gas Industries	
	0428	Uni-Frac Column and T-By Tray
7.09000	Primary Metals	
	0441	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby
7.10000	Civil Engineering	
	0203	Microwave Methods and Apparatus for Paving and Paving Maintenance
	0294	Highway Power Patcher
	0335	Robotic Bridge Observation and Information System
	0350	Method and Apparatus for Testing Soil
7.20000	Agriculture Equipment and Farm Equipment	
	0082	Cool Air Induction
	0090	Grain Dryer
	0140	Counter Flow Dual Tube Heat Exchanger
	0169	MIRAFOUNT
	0170	Fog System - Low Energy Freeze Protection for Agriculture
	0171	A Method of Preserving Fruits and Vegetables without Refrigeration
	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
	0224	Haile Alternate Fuel Grain Dryer
	0233	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
	0265	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
	0279	Method and Means for Preventing Frost Damage to Crops
	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

<u>Classif.</u>	<u>DOE No</u>	<u>Title</u>
7.20000		Agriculture Equipment and Farm Equipment (cont.)
	0327	Square Pattern Irrigation Sprinkler
	0373	Tobacco Harvesting Machine
7.40000		Mechanical Contrivances (Non-Vehicular)
	0263	Method for Reconditioning Rivetless Chain Links
	0277	Electronic Conveyor Control Apparatus
	0302	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
	0332	Volk Pistachio Huller
	0333	Laser Based Machine for Die and Prototype Manufacturing
	0356	Portable Automatic Firewood Processor
	0375	MDT Twister
	0394	Variable Wall Mining Machine
	0399	Hydrodynamic/Multi Deflection Pad Bearing
	0402	KTM Logger
	0424	An Automated Process for Garment Manufacturers
	0429	A Low Cost Galloping Indicator
8.10000		Consumer Education and Behavior
	0001	Demand Metering System for Electric Energy
	0306	An Efficiency Computer for Heated or Air Conditioned Buildings
8.20000		Appliances
	0007	Hydraulically Powered Waste Disposal Device
	0120	Vapor Heat Transfer Commercial Griddle
	0153	A New Equipment Design Concept for Storage of Hot Foods
	0192	Closed Cycle Dehumidification Clothes Dryer
	0238	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
	0240	All Steam Heated Sادiron for Commercial Use
	0322	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
	0389	Reduced Size Heating Assembly for an Electric Stove
	0355	Energy-Efficient Ice Cube Making Machine
	0434	Modular Apparatus for Laundry Dryer Heat Recovery
8.30000		Tools
	0409	Self-Dressing Resistance Welding Electrode
8.40000		Lamps and Light Bulbs
	0274	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency

ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

Classif.	DOE No	Title
9.00000	Miscellaneous	
	0104	Low Continuous Energy Mass Separation System
	0109	Hydrostatic Meat Tenderizer
	0115	Refrigeration System
	0181	The Karlson Ozone Sterilizer
	0190	Oxygen-Conducting Material and Oxygen-Sensing Method
	0202	Wobbling Type Distillation Apparatus
	0256	Method and Apparatus for Irrigating Container Grown Plants
	0257	Method and Apparatus for Melting Snow
	0304	Exfoliated Graphite Fibers
	0328	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
	0353	Compu-Turbo-Aligner
	0361	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations
	0378	An Improved Cutter for Plaster Board and the Like
	0393	Method and Apparatus for Ultrasonic Testing of Tubular Goods
	0398	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
	0408	Floodshield System
	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
	0426	Eddy Current Transducing System
9.50000	Instrumentation	
	0401	A Miniature, Inexpensive Oxygen-Sensing Element
9.51000	Electrical Demand, Overload or Consumption	
	0065	WattVendor

APPENDIX A

INVENTION CLASSIFICATIONS

CODE	TITLE	CODE	TITLE
1.00000	FUELS AND LUBRICANTS ACQUISITION, PRODUCTION, DISTRIBUTION	2.12000	SOLAR ELECTRIC POWER GENERATING SYSTEMS
1.01000	GEOPHYSICAL PROSPECTING	2.13000	PHOTOVOLTAIC DEVICES
1.10000	FOSSIL FUELS 1.11000 COAL	2.14000	SOLAR CONCENTRATORS - PHOTOVOLTAIC
1.11100	COAL LIQUIFICATION	2.15000	SOLAR CONCENTRATORS - THERMAL
1.11200	COAL GASIFICATION	2.20000	GEOHERMAL
1.11300	GREATER RESOURCE RECOVERY METHODS	2.21000	ELECTRICAL POWER GENERATION
1.11400	GREATER RESOURCE RECOVERY EQUIPMENT	2.30000	OCEAN THERMAL
1.12000	OIL	2.40000	WIND
1.12100	GREATER RESOURCE RECOVERY METHODS	2.41000	WIND DRIVEN MOTORS & COMPONENTS THEREOF
1.12200	GREATER RESOURCE RECOVERY EQUIPMENT	2.42000	WIND PROCESSES USING ENERGY FROM WIND
1.12300	OIL AND GAS WELL PUMPS AND DRILLS	2.50000	WATER POWER PROCESSES (INLAND)
1.12400	OIL AND GAS PIPELINES	2.51000	ELECTRICAL POWER GENERATION BY WATER POWER (INLAND)
1.13000	OIL SHALE	2.60000	OCEAN WATER POWER
1.13100	TAR SANDS	2.61000	WAVE POWER SYSTEMS
1.14000	NATURAL GAS	2.62000	TIDAL POWER SYSTEMS
1.14100	CHEMICAL CONVERSION OF GAS TO LIQUIDS	2.63000	OCEAN CURRENT POWER SYSTEMS
1.20000	ALTERNATE FUELS	3.00000	ENERGY CONVERSION FROM SECONDARY SOURCES (NOT INCLUDED BELOW)
1.21000	PROPANE	3.01000	ENERGY CONVERSION FROM SECONDARY SOURCES - THERMODYNAMICS
1.22000	METHANE	3.10000	COMBUSTION ENGINES AND COMPONENTS THEREOF
1.23000	HYDROGEN	3.10100	STIRLING ENGINES, MECHANICAL
1.24000	ALCOHOLS	3.10110	STIRLING ENGINES, THERMO
1.25000	HYBRID FUELS	3.11000	RECIPROCAL ENGINES, MECHANICAL
1.26000	FUEL CELLS	3.11100	RECIPROCAL ENGINES, THERMO
1.27000	FUEL ADDITIVES	3.12000	ROTARY ENGINES, MECHANICAL
1.28000	BIOENGINEERING AND MEDICAL	3.12100	ROTARY ENGINES, THERMO
1.28100	BIOMASS	3.13000	TURBINE ENGINES, MECHANICAL
1.29000	MISCELLANEOUS SYNTHETIC PROCESSES	3.13100	TURBINE ENGINES, THERMO
1.30000	GREASES AND LUBRICANTS	3.14000	FUEL SYSTEMS, MECHANICAL
1.40000	REFINED PETROLEUM PRODUCTS AND ADDITIVES	3.14100	CARBURETORS AND MODIFICATIONS THEREOF
2.00000	ENERGY CONVERSION FROM NATURAL SOURCES (NOT INCLUDED BELOW)	3.14200	FUEL INJECTORS
2.10000	SOLAR COLLECTORS	3.14300	WATER INJECTORS
2.11000	SOLAR TO DIRECT MECHANICAL ENERGY	3.14400	MULTI-FUEL MIXERS
		3.14500	AIR AND OXYGEN INJECTION
		3.14600	COMBUSTION ANALYZERS

<u>CODE</u>	<u>TITLE</u>	<u>CODE</u>	<u>TITLE</u>
3.15000	IGNITION SYSTEMS	5.43000	VEHICULAR COMPONENTS
3.20000	STEAM ENGINES AND TURBINES, MECHANICAL	5.43100	VEHICLE TRANSMISSIONS
3.21000	STEAM ENGINES AND TURBINES, THERMO	5.43200	VEHICLE BRAKING SYSTEMS (INCLUDES REGEN. BRAKING SYSTEMS, ETC.)
3.30000	AIR COMPRESSORS AND MOTORS	5.43300	VEHICLE WHEELS AND TIRES
3.40000	HYDRAULIC PUMPS AND MOTORS	5.43400	VEHICLE SUSPENSIONS
3.50000	ELECTRIC MOTORS AND GENERATORS	5.43500	VEHICLE BODY AND CHASSIS DESIGN
3.51000	MISCELLANEOUS ELECTRIC POWER GENERATING SYSTEM	5.43600	VEHICLE LUBRICATION SYSTEMS
3.60000	CHEMICAL THERMODYNAMICS	5.43700	DRIVER AND FUEL ECONOMY CONTROL SYSTEMS
3.61000	PHOTO CHEMICAL	5.43800	VEHICLE AIR CONDITIONING
3.70000	MECHANICAL THERMODYNAMICS	6.00000	BUILDINGS, STRUCTURES AND COMPONENTS
3.80000	HEAT PUMPS AND REFRIGERATION	6.10000	DESIGN, CONSTRUCTION AND CONSTRUCTION PRACTICES
3.90000	HIGHWAY POWER GENERATORS	6.20000	HEATING, COOLING, VENTILATING
4.00000	ENERGY STORAGE AND DISTRIBUTION (NOT INCLUDED BELOW)	6.20100	HEATING, COOLING AND VENTILATING INSTRUMENTS AND CONTROLS
4.10000	ELECTRICAL TRANSMISSION	6.21000	FIREPLACES
4.11000	ELECTRICAL STORAGE (BATTERIES)	6.22000	SOLAR HEATERS
4.12000	ELECTRICAL DISTRIBUTION (TRANSFORMERS, SWITCHGEARS, CONTROLS)	6.22100	SOLAR HEATERS - HEAT STORAGE
4.20000	MECHANICAL ELECTRICAL GENERATION, STORAGE, DISTRIBUTION	6.23000	BOILERS AND FURNACES (INDUSTRIAL)
4.30000	THERMAL ENERGY STORAGE	6.23010	SMALL BOILERS, FURNACES AND STOVES
4.40000	PNEUMATIC ENERGY GENERATION, STORAGE, DISTRIBUTION	6.23100	BOILER AND FURNACE FLUE HEAT RECOVERY
4.50000	HYDRAULIC (WATER, PUMPED ENERGY STORAGE, ETC.)	6.23200	BOILER AND FURNACE AIR AND OXYGEN INDUCTORS AND INJECTORS
4.60000	MISCELLANEOUS POWER GENERATOR, STORAGE AND TRANSMISSION	6.23300	BOILERS AND FURNACES FLUE VENT CONTROL
5.00000	TRANSPORTATION (NOT INCLUDED BELOW)	6.23400	BOILER AND FURNACE OIL BURNERS
5.10000	AIR TRANSPORTATION	6.23500	BOILER AND FURNACE STOKERS (INDUSTRIAL)
5.20000	WATER TRANSPORTATION	6.23600	BOILER AND FURNACE COMBUSTION CONTROLS AND EQUIPMENTS
5.30000	RAIL TRANSPORTATION	6.23700	BOILER AND FURNACE COAL-OIL-WATER MIXTURES
5.40000	HIGHWAY VEHICLES AND SYSTEMS	6.23800	COMBUSTION, CHEMICAL
5.41000	HIGHWAYS, STREETS AND TRAFFIC CONTROL	6.24000	ELECTRIC HEAT
5.42000	VEHICULAR POWER SYSTEMS (NOT INCLUDED BELOW)	6.25000	HEAT PUMPS
5.42100	COMBUSTION ENGINE VEHICLES	6.26000	AIR CONDITIONING & REFRIGERATION
5.42200	ELECTRIC VEHICLES	6.27000	VENTILATING SYSTEMS
5.42300	STEAM VEHICLES	6.28000	HUMIDIFICATION SYSTEMS
5.42400	HYBRID VEHICLES		

<u>CODE</u>	<u>TITLE</u>	<u>CODE</u>	<u>TITLE</u>
6.31000	HEATING SYSTEMS(HOT WATER)	8.10000	CONSUMER EDUCATION AND BEHAVIOR
6.31100	SOLAR HEATERS	8.20000	APPLIANCES
6.32000	HOT WATER CONSERVATION DEVICES AND PRACTICES	8.30000	TOOLS
6.40000	INSULATION AND INSULATING PRACTICES	8.40000	LAMPS AND LIGHT BULBS (6.5 FOR LIGHTING FIXTURES)
6.50000	ELECTRICAL WIRING AND FIXTURES	9.00000	MISCELLANEOUS
6.60000	PLUMBING AND FIXTURES	9.10000	NOT ENERGY-RELATED
7.00000	INDUSTRIAL PROCESSES (NOT INCLUDED BELOW)	9.20000	NUCLEAR
7.01000	CHEMICAL, CHEMICAL PROCESS INDUSTRIES UNIT OPERATIONS	9.30000	PERPETUAL MOTION
7.01100	IRON AND STEEL	9.40000	UNINTERPRETABLE
7.01200	PRIMARY NON-FERROUS METALS	9.50000	INSTRUMENTATION
7.01300	FABRICATED METAL PRODUCTS	9.50100	CHEMICAL, BIOCHEMICAL SENSORS AND INSTRUMENTATION
7.01400	AIR SEPARATION	9.50200	ELECTRONIC, OPTICAL SENSORS AND INSTRUMENTATION
7.01500	WATER AND WASTE TREATMENT	9.50300	HEAT TRANSFER, FLUID MECHANICS INSTRUMENTATION
7.01600	PACKAGING AND CONTAINERS	9.51000	ELECTRICAL DEMAND, OVERLOAD OR CONSUMPTION INDICATORS
7.01700	MISCELLANEOUS - DESALINIZATION - ELECTROLYSIS	9.60000	COMPUTER - DATA STORAGE AND RETRIEVAL
7.01800	SOLAR DISTILLATION PROCESSES	9.70000	COMMUNICATION SYSTEMS AND EQUIPMENT
7.01900	SOLAR EVAPORATION PROCESSES	9.80000	PRINTING SYSTEMS AND EQUIPMENT
7.02000	TEXTILES, FABRICS, RUGS, CLOTHING		
7.02100	POWDER METALLURGY		
7.02200	CERAMICS		
7.02300	COMPOSITE MATERIALS		
7.02400	STACK GAS SCRUBBERS		
7.03000	FOOD, FEEDS, LEATHER, FURS, FEATHERS, ETC.		
7.04000	LUMBER, WOOD, WOOD PRODUCTS INDUSTRIAL PROCESSES		
7.05000	PAPER AND ALLIED PRODUCTS		
7.06000	PETROLEUM, OIL AND NATURAL GAS INDUSTRIES		
7.07000	RUBBER AND PLASTICS		
7.08000	STONE, CLAY AND GLASS		
7.09000	PRIMARY METALS		
7.10000	CIVIL ENGINEERING		
7.20000	AGRICULTURE EQUIPMENT AND FARM EQUIPMENT		
7.30000	OIL SPILL RECOVERY		
7.40000	MECHANICAL CONTRIVANCES (NON-VEHICULAR)		
7.50000	SOLAR INDUSTRIAL		
8.00000	CONSUMER PRODUCTS		

APPENDIX B

TECHNICAL CATEGORIES AND ASSOCIATED INVENTION CLASSIFICATIONS

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

1. Fossil Fuel Production

1.00000 FUELS AND LUBRICANTS ACQUISITION, PRODUCTION,
DISTRIBUTION
1.01000 GEOPHYSICAL PROSPECTING
1.10000 FOSSIL FUELS
1.11000 COAL
1.11100 COAL LIQUIFICATION
1.11200 COAL GASIFICATION
1.11300 GREATER RESOURCE RECOVERY METHODS
1.11400 GREATER RESOURCE RECOVERY EQUIPMENT
1.12000 OIL
1.12100 GREATER RESOURCE RECOVERY METHODS
1.12200 GREATER RESOURCE RECOVERY EQUIPMENT
1.12300 OIL AND GAS WELL PUMPS AND DRILLS
1.12400 OIL AND GAS PIPELINES
1.13000 OIL SHALE
1.13100 TAR SANDS
1.14000 NATURAL GAS
1.14100 CHEMICAL CONVERSION OF GAS TO LIQUIDS

2. Direct Solar

2.10000 SOLAR COLLECTORS
2.11000 SOLAR TO DIRECT MECHANICAL ENERGY
2.12000 SOLAR ELECTRIC POWER GENERATING SYSTEMS
2.13000 PHOTOVOLTAIC DEVICES
2.14000 SOLAR CONCENTRATORS - PHOTOVOLTAIC
2.15000 SOLAR CONCENTRATORS - THERMAL

6.22000 SOLAR HEATERS
6.22100 SOLAR HEATERS - HEAT STORAGE
6.31100 SOLAR HEATERS

3. Other Natural Sources

1.20000 ALTERNATE FUELS
1.21000 PROPANE
1.22000 METHANE
1.23000 HYDROGEN
1.24000 ALCOHOLS
1.25000 HYBRID FUELS
1.26000 FUEL CELLS
1.27000 FUEL ADDITIVES
1.28000 BIOENGINEERING AND MEDICAL
1.28100 BIOMASS

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

3. Other Natural Sources (cont.)

- 1.29000 MISCELLANEOUS SYNTHETIC PROCESSES
- 2.00000 ENERGY CONVERSION FROM NATURAL SOURCES (NOT INCLUDED BELOW)
- 2.20000 GEOTHERMAL
- 2.21000 ELECTRICAL POWER GENERATION
- 2.30000 OCEAN THERMAL
- 2.40000 WIND
- 2.41000 WIND DRIVEN MOTORS & COMPONENTS THEREOF
- 2.42000 WIND PROCESSES USING ENERGY FROM WIND
- 2.50000 WATER POWER PROCESSES (INLAND)
- 2.51000 ELECTRICAL POWER GENERATION BY WATER POWER (INLAND)
- 2.60000 OCEAN WATER POWER
- 2.61000 WAVE POWER SYSTEMS
- 2.62000 TIDAL POWER SYSTEMS
- 2.63000 OCEAN CURRENT POWER SYSTEMS
- 3.00000 ENERGY CONVERSION FROM SECONDARY SOURCES (NOT INCLUDED BELOW)
- 3.01000 ENERGY CONVERSION FROM SECONDARY SOURCES - THERMODYNAMICS

4. Combustion Engines & Components

- 3.10000 COMBUSTION ENGINES AND COMPONENTS THEREOF
- 3.10100 STIRLING ENGINES, MECHANICAL
- 3.10110 STIRLING ENGINES, THERMO
- 3.11000 RECIPROCAL ENGINES, MECHANICAL
- 3.11100 RECIPROCAL ENGINES, THERMO
- 3.12000 ROTARY ENGINES, MECHANICAL
- 3.12100 ROTARY ENGINES, THERMO
- 3.13000 TURBINE ENGINES, MECHANICAL
- 3.13100 TURBINE ENGINES, THERMO
- 3.14000 FUEL SYSTEMS, MECHANICAL
- 3.14100 CARBURETORS AND MODIFICATIONS THEREOF
- 3.14200 FUEL INJECTORS
- 3.14300 WATER INJECTORS
- 3.14400 MULTI-FUEL MIXERS
- 3.14500 AIR AND OXYGEN INJECTION
- 3.14600 COMBUSTION ANALYZERS
- 3.15000 IGNITION SYSTEMS
- 3.20000 STEAM ENGINES AND TURBINES, MECHANICAL
- 3.21000 STEAM ENGINES AND TURBINES, THERMO

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

5. Transportation Systems; Vehicles & Components

- 5.00000 TRANSPORTATION(NOT INCLUDED BELOW)
- 5.10000 AIR TRANSPORTATION
- 5.20000 WATER TRANSPORTATION
- 5.30000 RAIL TRANSPORTATION
- 5.40000 HIGHWAY VEHICLES AND SYSTEMS
- 5.41000 HIGHWAYS, STREETS AND TRAFFIC CONTROL
- 5.42000 VEHICULAR POWER SYSTEMS(NOT INCLUDED BELOW)
- 5.42100 COMBUSTION ENGINE VEHICLES
- 5.42200 ELECTRIC VEHICLES
- 5.42300 STEAM VEHICLES
- 5.42400 HYBRID VEHICLES
- 5.43000 VEHICULAR COMPONENTS
- 5.43100 VEHICLE TRANSMISSIONS
- 5.43200 VEHICLE BRAKING SYSTEMS (INCLUDES REGEN. BRAKING SYSTEMS, ETC.)
- 5.43300 VEHICLE WHEELS AND TIRES
- 5.43400 VEHICLE SUSPENSIONS
- 5.43500 VEHICLE BODY AND CHASSIS DESIGN
- 5.43600 VEHICLE LUBRICATION SYSTEMS
- 5.43700 DRIVER AND FUEL ECONOMY CONTROL SYSTEMS
- 5.43800 VEHICLE AIR CONDITIONING

6. Building, Structures & Components

- 6.00000 BUILDINGS, STRUCTURES AND COMPONENTS
- 6.10000 DESIGN, CONSTRUCTION AND CONSTRUCTION PRACTICES
- 6.20000 HEATING, COOLING, VENTILATING
- 6.20100 HEATING, COOLING AND VENTILATING INSTRUMENTS AND CONTROLS
- 6.21000 FIREPLACES
- 6.23000 BOILERS AND FURNACES (INDUSTRIAL)
- 6.23010 SMALL BOILERS, FURNACES AND STOVES
- 6.23100 BOILER AND FURNACE FLUE HEAT RECOVERY
- 6.23200 BOILER AND FURNACE AIR AND OXYGEN INDUCTORS AND INJECTORS
- 6.23300 BOILERS AND FURNACES FLUE VENT CONTROL
- 6.23400 BOILER AND FURNACE OIL BURNERS
- 6.23500 BOILER AND FURNACE STOKERS (INDUSTRIAL)
- 6.23600 BOILER AND FURNACE COMBUSTION CONTROLS AND EQUIPMENTS
- 6.23700 BOILER AND FURNACE COAL-OIL-WATER MIXTURES
- 6.23800 COMBUSTION, CHEMICAL

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

6. Building, Structures & Components (cont.)

6.24000 ELECTRIC HEAT
6.25000 HEAT PUMPS
6.26000 AIR CONDITIONING & REFRIGERATION
6.27000 VENTILATING SYSTEMS
6.28000 HUMIDIFICATION SYSTEMS
6.29000 SOLAR AIR CONDITIONING

6.30000 HOT WATER SUPPLY
6.31000 HEATING SYSTEMS(HOT WATER)
6.32000 HOT WATER CONSERVATION DEVICES AND PRACTICES

6.40000 INSULATION AND INSULATING PRACTICES
6.50000 ELECTRICAL WIRING AND FIXTURES
6.60000 PLUMBING AND FIXTURES

7. Industrial Processes

7.00000 INDUSTRIAL PROCESSES(NOT INCLUDED BELOW)
7.01000 CHEMICAL, CHEMICAL PROCESS INDUSTRIES UNIT OPERATIONS
7.01100 IRON AND STEEL
7.01200 PRIMARY NON-FERROUS METALS
7.01300 FABRICATED METAL PRODUCTS
7.01400 AIR SEPARATION
7.01500 WATER AND WASTE TREATMENT
7.01600 PACKAGING AND CONTAINERS
7.01700 MISCELLANEOUS - DESALINIZATION - ELECTROLYSIS
7.01800 SOLAR DISTILLATION PROCESSES
7.01900 SOLAR EVAPORATION PROCESSES
7.02000 TEXTILES, FABRICS, RUGS, CLOTHING
7.02100 POWDER METALLURGY
7.02200 CERAMICS
7.02300 COMPOSITE MATERIALS
7.02400 STACK GAS SCRUBBERS
7.03000 FOOD, FEEDS, LEATHER, FURS, FEATHERS, ETC.
7.04000 LUMBER, WOOD, WOOD PRODUCTS INDUSTRIAL PROCESSES
7.05000 PAPER AND ALLIED PRODUCTS
7.06000 PETROLEUM, OIL AND NATURAL GAS INDUSTRIES
7.07000 RUBBER AND PLASTICS
7.08000 STONE, CLAY AND GLASS
7.09000 PRIMARY METALS

7.10000 CIVIL ENGINEERING
7.20000 AGRICULTURE EQUIPMENT AND FARM EQUIPMENT
7.30000 OIL SPILL RECOVERY
7.40000 MECHANICAL CONTRIVANCES (NON-VEHICULAR)
7.50000 SOLAR INDUSTRIAL

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

8. Miscellaneous

1.30000 GREASES AND LUBRICANTS
1.40000 REFINED PETROLEUM PRODUCTS AND ADDITIVES
3.30000 AIR COMPRESSORS AND MOTORS
3.40000 HYDRAULIC PUMPS AND MOTORS
3.50000 ELECTRIC MOTORS AND GENERATORS
3.51000 MISCELLANEOUS ELECTRIC POWER GENERATING SYSTEM
3.60000 CHEMICAL THERMODYNAMICS
3.61000 PHOTO CHEMICAL
3.70000 MECHANICAL THERMODYNAMICS
3.80000 HEAT PUMPS AND REFRIGERATION
3.90000 HIGHWAY POWER GENERATORS
4.00000 ENERGY STORAGE AND DISTRIBUTION(NOT INCLUDED BELOW)
4.10000 ELECTRICAL TRANSMISSION
4.11000 ELECTRICAL STORAGE (BATTERIES)
4.12000 ELECTRICAL DISTRIBUTION (TRANSFORMERS, SWITCHGEARS,
CONTROLS)
4.20000 MECHANICAL ELECTRICAL GENERATION, STORAGE, DISTRIBUTION
4.30000 THERMAL ENERGY STORAGE
4.40000 PNEUMATIC ENERGY GENERATION, STORAGE, DISTRIBUTION
4.50000 HYDRAULIC (WATER, PUMPED ENERGY STORAGE, ETC.)
4.60000 MISCELLANEOUS POWER GENERATOR, STORAGE AND TRANSMISSION
8.00000 CONSUMER PRODUCTS
8.10000 CONSUMER EDUCATION AND BEHAVIOR
8.20000 APPLIANCES
8.30000 TOOLS
8.40000 LAMPS AND LIGHT BULBS (6.5 FOR LIGHTING FIXTURES)
9.00000 MISCELLANEOUS

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

8. Miscellaneous (cont.)

- 9.50000 INSTRUMENTATION
- 9.50100 CHEMICAL, BIOCHEMICAL SENSORS AND INSTRUMENTATION
- 9.50200 ELECTRONIC, OPTICAL SENSORS AND INSTRUMENTATION
- 9.50300 HEAT TRANSFER, FLUID MECHANICS INSTRUMENTATION
- 9.51000 ELECTRICAL DEMAND, OVERLOAD OR CONSUMPTION INDICATORS

- 9.60000 COMPUTER - DATA STORAGE AND RETRIEVAL

- 9.70000 COMMUNICATION SYSTEMS AND EQUIPMENT

- 9.80000 PRINTING SYSTEMS AND EQUIPMENT

9. Out of Scope and Unclassifiable

- 9.10000 NOT ENERGY-RELATED

- 9.20000 NUCLEAR

- 9.30000 PERPETUAL MOTION

- 9.40000 UNINTERPRETABLE

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10. SUPPLEMENTARY NOTES Supersedes NBSIR 87-3673 <input type="checkbox"/> Document describes a computer program; SF-185, FIPS Software Summary, is attached.			
11. ABSTRACT <i>(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)</i> A brief description of the Energy Related Inventions Program and of all inventions recommended by the National Institute of Standards and Technology (formerly the National Bureau of Standards) to the Department of Energy since the inception of the program, including a brief summary of the current status of each.			
12. KEY WORDS <i>(Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)</i> status report; energy; inventions; innovations; new technology; NIST; DOE			
13. AVAILABILITY <input checked="" type="checkbox"/> Unlimited <input type="checkbox"/> For Official Distribution. Do Not Release to NTIS <input type="checkbox"/> Order From Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. <input checked="" type="checkbox"/> Order From National Technical Information Service (NTIS), Springfield, VA. 22161		14. NO. OF PRINTED PAGES 307	15. Price \$30.95

